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# ANNUAL REPORT 1926

F. P. WILLITS

*Secretary of Agriculture*

Modern farm home along state highway in Pennsylvania.

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GEO. F. JOHNSON, *Editor*

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## Letter of Transmittal

Honorable Gifford Pinchot,
Governor of Pennsylvania,
Harrisburg, Pennsylvania.

Sir:

I have the pleasure to transmit to you the report of the Department of Agriculture for the year 1926.

The accomplishments briefly recorded in this report reflect the very fine cooperation of the farmers as well as the public in general and the untiring efforts of my associates in the Department.

Every effort has been made in this report to present the details of the more important lines of work and the more significant statistical data at the same time keeping the report brief and readable.

Sincerely yours,
F. P. Willits,
Secretary of Agriculture.

# TABLE OF CONTENTS


| | Page |
|---|---|
| Pennsylvania as an Agriculture State | 6 |
| State Farm Products Show | 11 |
| Farm Legislation | 12 |
| State Council, a Forward Step | 12 |
| Revenue Created and Expenditures | 14 |
| Publications and Information | 15 |
| Farm Taxation Studied | 17 |
| Activities at the Sesqui-Centennial | 18 |
| No danger from Spray Residue | 19 |
| Bureau of Animal Industry | 19 |
| Tuberculosis Eradication | 20 |
| Indemnity Money Greatly Increased | 24 |
| Meat Markets and Slaughterhouses Inspected | 25 |
| Bovine Infectious Abortion Control | 26 |
| Hog Cholera Control | 28 |
| Serious Transmissible Diseases Controlled | 29 |
| Progress in Poultry Disease Control | 29 |
| State Institutions Served by Bureau | 30 |
| Dog Law Effectively Enforced | 30 |
| State Supreme Court Upholds Dog Law | 31 |
| Control of Rabid Dogs | 32 |
| Stallion Enrollment | 33 |
| Animal Specimens Examined | 33 |
| Bureau of Foods and Chemistry | 34 |
| New Laws Give More Adequate Protection | 34 |
| Food Supply Attains High Standard of Purity | 36 |
| Complaints are Investigated and Laws Explained | 38 |
| Fewer Brands of Fertilizer | 39 |
| All Laws Vigorously Enforced | 39 |
| Bureau of Markets | 43 |
| Market Reporting | 43 |
| Fruit and Vegetable Marketing | 45 |
| Poultry Marketing Activities | 49 |
| Better Wheat for Home Markets | 51 |
| Cooperative Buying and Selling | 54 |
| Market Investigations | 55 |
| Complaints Against Dealers | 56 |
| Bureau of Plant Industry | 56 |
| Organization | 56 |
| Bee Disease Control Increases Honey Production | 57 |
| Botany Section Enforces Seed Law | 58 |
| Weed Identification and Control | 59 |
| Nursery Inspection | 59 |
| Application of Inspection Service | 59 |
| Entomology Section | 61 |
| Japanese Beetle Quarantine and Control | 61 |
| European Corn Borer Control | 64 |

Oriental Fruit Moth ..... 66
Mexican Bean Beetle ..... 67
Minor Insect Pests ..... 68
Plant Pathology Section ..... 69
Plant Disease Control ..... 69
No Recent Spread of Potato Wart ..... 69
Peach Yellows Successfully Controlled ..... 70
White Pine Blister Rust ..... 71
Cedar Rust No Longer Troublesome ..... 71
More Seed Potatoes Certified ..... 72
Bureau of Statistics ..... 73
Federal-State Crop Reporting ..... 73
Crop Production in 1926 ..... 74
Statistical Material Widely Used ..... 77
Crop and Livestock Trends ..... 77
Plans for 1927 Triennial Farm Census ..... 84
Crop and Livestock Report ..... 85



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# ANNUAL REPORT 1926

By F. P. WILLITS

*Secretary of Agriculture*

## Pennsylvania as an Agricultural State

Agriculture is a major industry in Pennsylvania. The annual gross income amounts to approximately $550,000,000 which is produced on 200,000 farms by a farm population of 900,000, about one-tenth of the State's total population. It is estimated that of this gross income, approximately $500,000,000, or an average of about one and a half million dollars for each business day of the year, represents costs such as labor, supplies, taxes, farm equipment, etc. This gives some idea at least of the enormous purchasing power represented by the farmers of Pennsylvania and the importance of the farmer in the prosperity of the State.

**Balanced Industry, a Mutual Advantage.** Figures for 1920 show that the total valuation of all farm land, farm buildings, livestock and farm equipment was $1,729,000,000, a rank of fourteenth among all the States, while the capital invested in other industries including public service companies, food manufacturing, steel, mines, lumber, paper, textiles, chemicals, clay, glass, stone products, etc., was $5,799,500,000. The farm home, however, is included in the farm investment which makes the total figure not entirely comparable with other industries.

Because of the prominence of Pennsylvania as an industrial state, it is frequently overlooked that agriculture is one of the major industries ranking second among all the industries in the amount of capital invested. The metal and metal products industry leads with $2,110,000,000 invested. It is well to emphasize that this prominence of Pennsylvania in both agricultural and industrial effort has given the State a mutually advantageous balance present in few other states.

In 1926, the State produced crops valued at $260,000,000 on an estimated area of 7,367,000 crop acres, at the same time maintaining livestock valued at $150,000,000. In both the number of farms and the annual value of farm products, Pennsylvania surpasses the corresponding figures for three-fourths of the States.

In 1919, Pennsylvania ranked third among all the states in the value of dairy products and in 1921 seventh in the value of all farm crops. In 1926, she ranked second in the production of buckwheat, fourth in apples, sixth in potatoes, seventh in tame hay, fifth in grapes, seventh in rye and tobacco, eighth in wheat, twelfth in oats, and fifteenth in corn. The diversification of Pensylvania agriculture

is very evident from this high rank in so many different crops and livestock products. No state has a more complete diversification including livestock production, cropping and orcharding than Pennsylvania. This results in our State being largely free of depressions, and having a constant purchasing power largely on a cash basis, which is not always true in the agricultural states of other sections.

It is likewise worthy of note that in all the major cereal crops, the yield per acre in Pennsylvania far exceeds the average yield for the United States, corn surpassing the nation's average of 26.6 bushels by 14.4 bushels in 1926. One important exception is that of hay. The Pennsylvania average is 1.30 tons per acre while the average for the United States is 1.47 tons. This, however, serves as an additional argument for the greater use of legume hay crops on farms within the State. In 1926, alfalfa yielded 2.4 tons per acre, almost twice the average yield of other hay crops. The acreage planted to alfalfa has increased from 30,773 acres in 1919 to 73,000 acres in 1926. Continued expansion of the alfalfa acreage can not be too ernestly recommended. Experience and experiments during the last decade show that farmers profit in many ways by growing alfalfa. Alfalfa is a better feed than the crop which it is replacing since experiments show that the hay is worth as much as bran. The yield is also high, ranging from two to four tons per acre. Alfalfa is likewise a soil builder since it collects and stores nitrogen in the soil. In many cases alfalfa is replacing timothy which has a poor market, being an unsatisfactory feed for most farm animals, and is quite commonly regarded as a soil robber.

**State Has Advantages in Farming.** The situation of the state's farm land permits the cultivation of a great variety of crops. The elevation ranges from practically sea level to over 2,000 feet and the

Fig. 1. One of Pennsylvania's many rich farming valleys.

growing season from 90 to 180 days. This range makes possible the general cultivation of fruits, vegetables, cereals and grasses. Aside from dairying and certain crops such as corn, and oats, which are found throughout the State, several sections have become well-known for specialized crops.

The market problem varies in all phases from local direct marketing, such as selling at roadside markets from door to door and at curb markets to the remote form in which products are shipped to large markets. Pennsylvania farmers are particularly fortunate in their numerous local markets. The State has 150 cities of 5,000 to 25,000 population or almost twice as many as any other State. These centers in addition to the large cities give farmers unexcelled, dependable markets for their products. It is estimated that farm products produced in Pennsylvania are within an average distance of 100 miles of their consuming markets. At the same time, these local markets give consumers convenient sources of fresh high-grade products.

Coupled with accessible markets and a diversified type of agriculture, Pennsylvania farm land has a conservative valuation. The average value of all farm lands in the State with improvements is estimated at $77 per acre, and without improvements, $46 per acre. In other words, the replacement costs of improvements almost equals the total value of the farm land itself. This conservative valuation eliminates the problem of over-valuation common in certain other agricultural areas. Sufficient capital is likewise available for financing farm operations.

One of the handicaps of the past has been the shortage of labor but this is being gradually met by the adoption of more efficient methods in which improved farm machinery and more adequate farm power have played an important part. In recognition of the absolute necessity of economizing man labor and utilizing mechanical power in farm work, farm leaders are stressing the importance of rapid extension of electric service to farmers. A most noticeable change has come about during recent years in the application of scientific principles to the old methods with a resulting increase in productiveness per animal unit, per acre and per man. The combination of scientific method with improved machinery has brought about a type of agriculture in Pennsylvania which is proving its permanency in the face of increasing competition from other agricultural states.

**More Productive Crops and Better Live Stock.** Rapid progress is being made in the production of improved varieties of crops. It is estimated that fully 90 per cent of the wheat grown in the State in 1926 was of the five improved varieties of wheat,—Pennsylvania 44, Forward, Red Rock, Leap's Prolific and Old Fulcaster.

In 1926, more than 80 farmers produced 400 or more bushels of potatoes on a measured acre, while in 1925, 39 made this record; in 1924, 33; and in 1923, 53. The highest yield in 1926 was 688 bushels while the average yield for the State was 112 bushels.

The importance with which Pennsylvania farmers regard livestock in the success of their business is indicated by the fact that practically every farm in the State has some form of livestock. More than four of every five farms have cattle, three of every four have swine

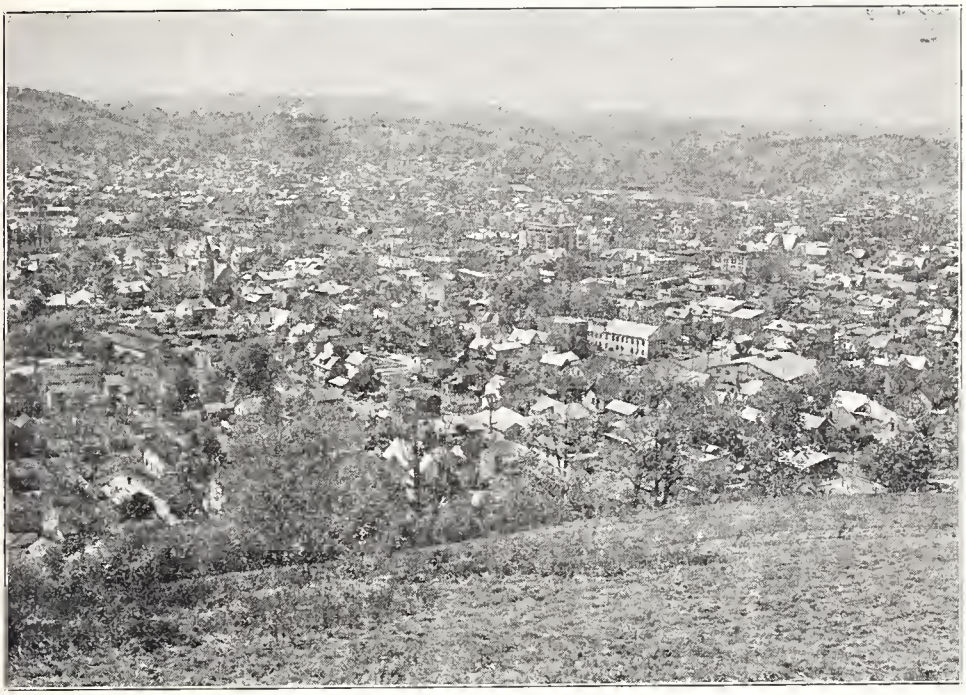

Fig. 2. Pennsylvania has 150 cities of 5,000 to 25,000 population which afford excellent markets for farm products.

and nine of every ten have poultry, according to the 1920 Federal Census figures. Less than seven per cent of the farms have neither horses, mules, cattle, sheep nor swine.

Without livestock, farming in the Keystone State would not be the progressive, diversified type that is found throughout the Commonwealth to-day. A farming system which includes the production of grain and legume hay crops and the feeding of dairy cattle, beef cattle, swine and sheep, makes it possible to maintain soil fertility, to reduce farm income risks to a minimum and to secure the greatest returns even in periods of depression.

Since it is estimated that the crops of 80 per cent of the improved land area of the State are consumed by livestock, the necessity of having improved, healthy flocks and herds on every farm is apparent.

**The Future in Agriculture.** When looking into the future, the importance of continued research designed to make both production and marketing more efficient and profitable, must be emphasized. In agriculture, the same as any other industry, conditions are always changing. They either get better or worse. We want our agriculture to be always in a healthful condition. To enjoy this condition, it

is necessary to develop new plans and new methods. Our present ways may seem good enough but the day will come when they will be just as out-of-date as the methods followed a generation ago seem to us now.

Table I gives the 1920 livestock figures for the State and also the per cent of all farms which have the various types of livestock.

TABLE 1. Livestock on Pennsylvania Farms—1920 Census

| Number | Total Value | Average Value per Head | Number of Farms Reporting | Per cent of all Farms | Average value per Farm |
|---|---|---|---|---|---|
| HORSES | | | | | |
| 505,966 | $60,828,872 | $120.22 | 173,890 | 86.0 | $349.80 |
| MULES | | | | | |
| 55,081 | $8,172,057 | 148.36 | 22,838 | 11.3 | 357.80 |
| ALL CATTLE | | | | | |
| 1,545,548 | $123.065,618 | 79.63 | 175,581 | 86.8 | 700.90 |
| BEEF CATTLE | | | | | |
| 229,745 | $16,389,069 | 71.34 | 46,880 | 23.2 | 349.60 |
| DAIRY CATTLE | | | | | |
| 1,315,803 | $106,676,549 | 81.07 | 169,596 | 83.9 | 629.00 |
| SHEEP | | | | | |
| 508,711 | $5,192,704 | 10.21 | 19,007 | 9.4 | 273.20 |
| SWINE | | | | | |
| 1,190,951 | $22,111,277 | 18.57 | 148,120 | 73.2 | 149.30 |
| MAJOR LIVESTOCK CLASSES | | | | | |
| ---------- | $219,420,539 | ---------- | 188,821 | 93.4 | 1,162.10 |
| ALL POULTRY | | | | | |
| 15,226,961 | $18,639,535 | 1.22 | 189,149 | 93.5 | 98.50 |
| CHICKENS | | | | | |
| 14,503,468 | $17,487,128 | 1.21 | 188,632 | 93.3 | 92.70 |
| HIVES OF BEES | | | | | |
| 122,419 | $714,567 | 5.84 | 19,740 | 9.8 | 36.20 |

In this connection, the place played in farm progress by the implement manufacturers is deserving of mention. Without their constant efforts to improve old machinery and develop new implements, progress in farming would be seriously hampered, if not made practically impossible.

One point must always be kept in mind by Pennsylvania farmers. Their future depends more and more upon the adaptation of their production to the needs of the local markets which abound on every hand. This means the constant improvement of the quality of the products produced, selling by grade and at all times catering to the demands of the consumers. It must be recognized that competitors will constantly seek markets in Pennsylvania and local producers must produce quality products to meet this competition. In order to have a product of the best quality, it is necessary to wage a relentless war on the ever increasing number of pests and diseases. A generation ago, we did not have the Japanese bettle, the Oriental fruit moth, the European corn borer, potato wart and a dozen other pests and diseases to fight. Today they are on every hand and only those producers who are alert to the absolute necessity of vigorous control measures can expect to produce quality products and enjoy the most remunerative market.

**Improved Roads.** Improved roads are of a great economic importance in the marketing of agricultural products. Pennsylvania has now about completed the main highway system which has been the first necessary step in solving the road problem. It is now time to give more attention to the "feeder" roads for the farmer. Full value will not be derived from the trunk line roads until these "feeder" roads are constructed. This will require the building of less costly, hard-surfaced roads into each township which will enable farmers to transport their crops with greater economy than is possible at the present time. It is not enough for the State to build the main trunk roads on which farmers make up only about 5 per cent of the traffic. More State aid must be given for the building of the "feeder" roads, especially in the less wealthy districts.

**Rural Education.** Present-day agriculture is of such a complicated nature and requires such a wide knowledge of plants, animals, mechanics and economic conditions that the farmers of the future must have good educational foundation. Too many rural people today, because of the inaccessibility of high schools or because of lack of appreciation of the value of more education, consider their schooling complete with the common school. A high school education which has been carefully designed to the needs of rural people should be considered the least foundation upon which to build successful farmers of the future.

Education is not a local township or school district problem. Thousands of the most capable farm boys and girls go eventually to the city to take up important work which means that the country as a whole benefits and should be vitally interested in having these boys and girls educated for their work. More and better graduated state aid is essential for providing equality in educational opportunities.

## State Farm Products Show

Cooperation among individual farmers, and by organized groups has been the keynote to agricultural progress. The State Farm Products Show reflects the progress possible when all agencies in the State cooperate. This show has been held each January for the past ten years, expanding from 10,000 square feet of floor space in 1917 to

TABLE 2. Growth of the Annual State Farm Products Show in Pennsylvania, January 1917-1927

| Year | Square Feet of Floor Space | Amount of Premiums Offered | Number of Exhibits(1) | Educational Meetings | |
|---|---|---|---|---|---|
| | | | | Number of Associations | Number of Lectures |
| 1917, | 10,000 | $ 735 | | 5 | 45 |
| 1918, | 15,000 | 952 | | 7 | 58 |
| 1919, | 25,000 | 1,202 | | 11 | 70 |
| 1920, | 30,000 | 1,557 | | 12(2) | 75(2) |
| 1921, | 60,000 | 1,600 | | 14(2) | 100(2) |
| 1922, | 60,000 | 1,980 | | 14 | 107 |
| 1923, | 75,000 | 2,550 | | 16 | 134 |
| 1924, | 83,000 | 3,469 | | 24 | 130 |
| 1925, | 83,000 | 5,190 | 2,211 | 26 | 158 |
| 1926, | 104,000 | 6,341 | 4,319 | 27 | 164 |
| 1927, | 120,000 | 7,000(2) | | 28 | 175(2) |

(1) Records not available prior to 1925. (2) Estimated.

120,000 in 1927, from $1,080 in premiums to $7,000, and from 14 cooperating organizations to 28. The number of entries in the various exhibits totalled 4,319 in the 1926 show. No admission is charged to any of the exhibition buildings or educational meetings where approximately 175 lectures were delivered in 1927.

The unanimous support of more than twenty-five farm organizations, the State Council of Agricultural Associations, the Pennsylvania State College and the various Departments of the State Government makes the Show possible.

## Farm Legislation

The Department, in cooperation with other farm agencies, gives consideration to all legislation of interest to farmers presented at the sessions of the Legislature. Hearings are frequently arranged so that the true view point of the farmers can be ascertained by the legislators. The Department encourages legislation that is designed to better the farming conditions in the State. Whenever it is deemed necessary to revise laws charged to the Department for enforcement, amendments are drawn up and every attempt made to get the favorable action of the Legislature. This enables the Department work to be carried on with the greatest possible efficiency and effectiveness. For example, laws enacted at the 1925 Session of the Legislature of direct interest to agriculture include the following: Milk Bottling Law, preventing skimming, furnishing a better product and leading to greater consumption; Milk Testers Law, protecting dairymen in the sale of milk by checking tests and licensing weighers, samplers, and milk plants; Amendment to Fertilizer Law, prohibiting sale of certain low grade fertilizers, to better protect the farmer—also special clause on tobacco fertilizer to protect tobacco growers; Amendment to Insecticide Act, providing registration of insecticides or fungicides and testing of these so as to insure the farmer dependable spray materials; Corn Borer Quarantine, protecting the great corn industry of Pennsylvania; Emergency Fund, creating a fund for protection in case of certain outbreaks of plant or animal diseases.

## State Council, a Forward Step

On February 20, 1923, the State agricultural officials brought together in conference in Harrisburg the representative minds of our Pennsylvania farms and the principal divisions of agricultural activity. Two hundred or more farm leaders were present. These men made the first organized attempt of the combined farm interests to outline a policy for improving Pennsylvania's system of production and marketing.

The conference report, issued as Department Bulletin 373, sets forth a program of development that should take place in the agriculture of the State. Numerous suggestions made by these representative farmers for bettering the production and marketing of grain and hay crops, fruits, vegetables, poultry, hogs, dairy and beef cattle and crop and livestock products, are carried in the published report.

Lasting results were assured the conference action in the formation several months later of an advisory group known as the Pennsylvania State Council of Agricultural Associations which has since been active in the farmers' interest including such projects as rural electrification and increased indemnity for tuberculosis eradication and agricultural research. The purposes of this Council as stated in its constitution are as follows: 1. To bring together representatives of agricultural associations and agencies at a round-table for mutual understanding and the discussion of their problems. 2. To coordinate agricultural policies for definfte action. 3. To invite and support measures beneficial to agriculture.

The Council has been enconraging in every possible way the wider use of electricity in rural districts in addition to helping to secure more indemnity money for the tuberculosis eradication work, more aid for the Pennsylvania State College, etc. A study of the use of electricity by farmers has been made and statistics have been compiled regarding the extent and use of electric current on the farm. The Council realizes the importance of making electricity available to the greatest number of farmers at a satisfactory rate and is doing everything possible to bring this condition about.

**Many Agencies Cooperate.** While numerous details of the work of the various Bureaus of the Department are discussed in the following pages, the Department wishes to make clear that many agencies have cooperated and are constantly contributing to the progress of agriculture in Pennsylvania. The Pennsylvania State College through its teaching extension and research efforts is doing a most valuable work in bringing about more efficient production of both crops and livestock. Numerous farm organizations are also contributing a great deal to the cause of better agriculture in their efforts to secure proper legislature, to get farmers properly organized for buying and selling, and to spread the most modern principles of agriculture to their members. The cooperative effort of all agencies is well illustrated in the tuberculosis eradication work. The local extension service through the county agricultural agent lays the foundation for the work by getting farmers interested and actually signed up for eradicating tuberculosis from their herds. The State cooperates with local veterinarians in making the proper tests. Then, both the State and Federal governments contribute indemnity money to pay part of the loss suffered by owners of the reacting cattle.

The various Departments of the State government are likewise constantly contributing to the welfare of rural people. The Department of Public Instruction is fostering better instruction and more facilities in rural schools, special mention being due the progress in teaching agriculture in the vocational schools. The Department of Forests and Waters is aiding the agricultural industry greatly through its distribution of free seedling trees and its general forest conservation program.

The Department of Highways is extending improved roads into rural districts. The Department of Health is controlling diseases which are as much a menace to health in rural as in urban districts.

The State Police afford farmers their only effective police protection. The work of the Department of Welfare is just as essential to rural as urban betterment.

**Scope of Department Activities.** The Department of Agriculture is essentially a service agency which seeks to prevent or remove obstacles to economical production and efficient marketing of farm products, to promote fair business dealings, and to insure pure food products. One very important responsibility of this Department is to prevent serious plant and animal pests from being brought into the State, and to eradicate those which have already established themselves. In order to accomplish the desired ends, there must be a very definite organization. By having the Department divided into the following bureaus: Administrative, including the Division of Disbursements and the Division of Publications and Information, Animal Industry, Plant Industry, Foods and Chemistry, Statistics, and Markets, it is possible to give efficient and prompt service to farmers in their daily problems.

## Revenue Created and Expenditures

**Two Year Period.** Out of a little over $4,000,000 estimated to be spent by the Department during the biennium from June 1, 1925, to May 31, 1927, one-half will be paid to farmers as indemnity for tubercular cattle. This is not as much money as other States are spending per capita for similar purposes, but the amount is over five and a half times that spent in 1921-1923. The protection and promotion of the animal life of the State other than that protected through indemnity of tubercular cattle will take about 30 cents out of every dollar, or $1,201,645. A full discussion of the scope and value of this work appears in the report of the Bureau of Animal Industry starting on page 19.

The protection and development of plant life throughout the State will take 7.6 cents out of every dollar. This is the work of the Bureau of Plant Industry which is described in detail starting on page 56. About eight cents out of every dollar goes for the protection of Pennsylvania homes against harmful foodstuffs. The Bureau of Foods and Chemistry is charged with this work and its report appears on page 34. While spending $319,340, or 7.9 per cent of the total for the enforcement of food, feed, fertilizer and similar laws, it is estimated that $1,051,000 of revenue will be brought into the State treasury during the same period through fines and fees in enforcing these laws. A little over two cents of every dollar goes for solving marketing problems through the activities of the Bureau of Markets as described on page 43.

The overhead administration including the compilation of crop and livestock statistics of the Department and the expenses of the State Farm Products Show takes but 3.5 cents out of every dollar. The scope of the statistical work is given in detail in the report of the Bureau of Statistics appearing on page 73. The Department contributes from $3,000 to $4,000 a year in addition to clerical help and printing to the State Farm Products Show.

When considered in its entirety, ninety-six and a half cents of every dollar go back to the localities in the various services described in this report. During the biennium 1923-1925, the expenditures of the Department amounted to $2,197,168, the revenue created amounted to $2,300,591, or $103,423 more than was spent. Of the total expenditures, $814,000 went directly back to the farmers for indemnities and premiums at fairs.

**Four Year Period.** When considering revenue and expenditures for the period from June 1, 1923, to May 31, 1927, the expenditures of the Department will amount to approximately $6,256,529, while the revenue created from fines, license fees, permits, etc. during the same period will amount to approximately $5,301,709. During the four years, the Department will come within $954,320 of creating sufficient revenue to meet all its expenses. Of the expenditures, a sum of $2,970,137, or almost one-half of the total will go directly back to the farmers for indemnities and premiums at fairs. In other words, the Department will expend about $3,286,392 in its regulatory, research and educational work (not considering indemnity money) and will have created a revenue of $2,015,317 in excess of this expenditure.

A sum of approximately $2,548,992, an amount greater than the total spent in all the previous years of the tuberculosis eradication work combined, will be paid to farmers as indemnity for tubercular cattle.

Of the total amount available for expenditure by the Department, including all appropriations for the four-year period, $3,313,246 comes from the General Fund, $3,014,170 comes from the Dog License money alone, and an additional $157,136 is estimated to come from miscellaneous special funds. The Dog License money is used exclusively for the protection of the animal life of the State and through indemnity of tubercular cattle for keeping the menace of tuberculosis from the children. Damages to livestock and poultry are also paid from this fund.

It can be readily noted from the foregoing figures that the contribution of the State through the Department has been a negligible tax burden since the work has largely paid its own way.

## Publications and Information

Public support and cooperation is essential for any public agencies to give the greatest service to the State. We believe publications carefully written to give the necessary information and distributed in the right channels is probably the most effective way to give the public the information as to why and how they can support the different activities of the Department.

The publication work carried on by the Department has proven a great aid in law enforcement. Means have been developed whereby the activities of the Department, especially in the enforcement of the

numerous State laws dealing with agricultural welfare, can be placed before the public in an accurate and readable way. A weekly news bulletin is prepared and mailed to every newspaper and farm journal circulating in the State as well as to all farm leaders and farm organizations interested in the betterment of Pennsylvania agriculture and farm life.

Complete reports on certain features of the Department's work especially the analysis of foods, feeding stuffs, fertilizer and lime, are issued from time to time in order that the public may know the exact condition of the products they buy.

It has been the policy since 1923 to have these reports published as promptly as printing facilities will permit. The report of the Bureau of Foods had not been published since 1919. This was brought up-to-date and published in 1923. Previous to 1924, two fertilizer reports were issued, one covering the Spring and the other the Fall collection of fertilizer samples. In the interest of economy and in order to give the farmers a more useful report, only one report covering the activities for the entire year has been published since 1924. No annual report of the Department activities had been published since 1916. Realizing the need for a popular, published statement and record of the work, a report was published covering in detail the work of the Department during 1925, as well as tables giving important statistical information for the years since the 1916 published report. A monthly publication entitled, "Keystone Cooperation" was also started in 1925 and continued through 1926. This is designed to encourage cooperative buying and selling in the State by making available to all officers and directors of cooperative organizations, timely information and worthwhile experiences.

A complete list of the bulletins published since June 1, 1923 is as follows:

| Number | Subject |
|---|---|
| 373 | Report of Agricultural Conference |
| 380 | Lime Report—1922-1923 |
| 381 | Standard Grades for Apples, Potatoes and Wheat |
| 382 | Peach Yellows and Little Peach |
| 383 | P. D. B. (Paradichlorobenzene) and other Controls for the Peach Tree Borer |
| 384 | Grasses of Pennsylvania* |
| 385 | Report of the Bureau of Foods—Years 1920-1923 |
| 386 | The Round Headed Apple Tree Borer |
| 390 | The Japanese Beetle in Pennsylvania |
| 392 | The Mushroom Industry of Pennsylvania |
| 393 | Problems in Marketing Pennsylvania Wheat |
| 394 | Potato Wart |
| 396 | The Pennsylvania Vegetable Forcing Industry |
| 397 | Licensed Nurserymen in Pennsylvania |
| 398 | Scale Insects Injurious in Pennsylvania |
| 399 | Preservation of Wild Flowers in Pennsylvania* |

*Supply exhausted.

| Number | Subject |
|---|---|
| 404 | Bovine Infectious Abortion |
| 405 | The Oriental Fruit Moth |
| 406 | Sprays for Japanese Beetle |
| 407 | The Farm Electrified |
| 408 | The Vegetable Industry of Pennsylvania |
| 410 | Control of Japanese Beetle in Lawns |
| 411 | Apple Rust and Its Control |
| 412 | How Electric Service can be had in Rural Districts by means of Organization |
| 413 | Greenhouse Fumigation |
| 414 | European Corn Borer and Quarantine Regulations |
| 415 | Report of Seed Analysis, 1925 (Report also published for 1924) |
| 416 | Pennsylvania Weeds |
| 417 | The Mexican Bean Beetle in Pennsylvania |
| 418 | The Peach Tree Borer and Its Control |
| 419 | Law Bulletin |
| 420 | Seed Potato Certification in Pennsylvania |
| 421 | Directory of Stallions—1925 (Directory also published for 1924 and 1923) |
| 422 | Feeding Stuffs Report—1925 (Reports also Published for for 1924 and 1923) |
| 423 | Crop and Livestock Report—1925 (Reports also published for 1924 and 1923) |
| 424 | County and State Agricultural Organizations—1925 (Also Published for 1924 and 1923) |
| 425 | Fertilizer Report—1925, Reports for 1924 and 1923 also published |
| 426 | White Pine Blister Rust |
| 427 | Annual Report, 1925 |
| 428 | Pennsylvania as a Market for Potatoes |
| 429 | Farmers' Cooperatives in Pennsylvania |
| 430 | Lime Report—1924-1925 (Report also published 1922-1923) |
| 431 | Wild Flowers—Enjoy but do not Destroy |
| 437 | Some Phases of Taxation in Pennsylvania |

## Farm Taxation Studied

Farm Taxation has become one of the greatest problems confronting our agriculture. Realizing this, the Department in 1925 and 1926, as authorized by the basic act of 1895, made a study of several phases of the taxation system as they relate to agriculture.

Among the facts revealed by the study are the following:

That with one exception, in the areas studied the assessment on farms averages higher in proportion to the sales value than on town property.

That some property owners both rural and urban pay from two to nine times as much tax in proportion to the property they own as others in the same town or township, simply because of faulty assessments.

That in some counties owners of large properties are able to keep their assessments much below what they should be in proportion to the assessment on smaller properties.

That the practice of making assessments by locally elected assessors, revised only by the county commissioners on appeal by the property owners has proved an unqualified failure.

That State aid for schools and highways has not been graduated sufficiently to equalize the burden of taxation on property in different sections of the State.

That from 14 to 20 per cent of the total earnings of the farm, the farmer and all members of his family, were paid in taxes.

## Activities at the Sesqui-Centennial

The Pennsylvania Department of Agriculture cooperated with the Sesqui-Centennial Commission, The Pennsylvania State College, and other State agencies and farm organizations in arranging the following features at the Sesqui-Centennial celebration: (1) An exhibit depicting agricultural progress, present-day methods and the extent of agriculture in Pennsylvania; (2) A four-reel film showing the activities of the Pennsylvania Department of Agriculture; (3) An "Agricultural Week" program with special exhibit features.

The general agricultural exhibit which was arranged in the Pennsylvania Building portrayed the chief characteristics of Pennsylvania's agriculture—diversity, stability, market accessibility, and permanence—as demonstrated through the one-hundred and fifty years of farming practice.

In line with other Departments of the State Government, motion pictures were made showing the principal activities of the Department. The object of this film was to picture briefly the importance of Pennsylvania as an agricultural state and to show how the State Department of Agriculture is serving this farming industry and the public in general.

October 25 to 30 was designated as Agricultural Week at the Sesqui-Centennial. The Department, in cooperation with the Sesqui-Centennial Commission, the Pennsylvania State College, the Pennsylvania State Grange, the State Horticultural Association of Pennsylvania, the Pennsylvania Potato Growers Association, the Pennsylvania Poultry Association, the Philadelphia Interstate Dairy Council, the Pennsylvania Cooperative Mushroom Growers Association, and the Pennsylvania Bakers Association, arranged instructive programs and exhibits featuring the extent and quality of Pennsylvania farm production.

Each day of "Agricultural Week" was specially designated. Thus, Monday was Cereal Day; Tuesday, Grange Day; Thursday, Poultry and Dairy Day; Friday, Potato Day; and Saturday, Apple Day.

## No Danger From Spray Residue

During the season 1925 there were complaints of excessive spray residue on some apples exported from the United States. We felt quite sure that none of these came from Pennsylvania and in order to fully safeguard both our producers and consumers, the Department conducted an investigation in 1926.

During the period from September 14 to September 30, inclusive, which is just previous to picking time, 250 composite samples were taken from 160 orchards in the counties of Adams, Franklin, York, Cumberland, Lebanon and Berks, covering the following varieties: Grimes Golden, Jonathan, Smoke House, McIntosh, Hubbardson, Wealthy, Ben Davis, York, Northern Spy, Delicious, Stayman, Black Twig, Gano, Albemarle, Pippins, King Daniel, and Northwestern Greening.

In taking the samples, an effort was made to select samples that would represent excessive spray conditions. The results were most gratifying in that the amount of residue found was negligible in many cases amounting to little more than a trace. The apple growers and buyers were notified of the safety of Pennsylvania apples as far as the spray residue was concerned.

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# Bureau of Animal Industry

More than 93 per cent of the farms in Pennsylvania have some form of live stock, according to recent estimates. It is likewise estimated that the products of 80 per cent of the improved farm land in the State are marketed in the form of livestock or livestock products.

This livestock industry, representing a farm investment of approximately $160,000,000, is constantly subject to serious transmissible diseases and numerous parasites, which if not given immediate attention would seriously handicap the agriculture of the State. For example, hog cholera was especially prevalent throughout the middle west, and would have spread into Pennsylvania if steps were not taken promptly to keep the epizootic out of the State. As a result of prompt vaccination, with the highest grade of anti-hog cholera serum and virus, made possible by an annual contract which the Bureau of Animal Industry maintains with a reputable manufacturer, and other precautions, the situation in Pennsylvania was kept practically normal.

TABLE 3. Livestock and Poultry on Pennsylvania Farms, January 1, 1926

| Class | Number | Value |
|---|---|---|
| Horses and Mules, | 484,000 | $45,919,000 |
| Dairy Cows, | 853,000 | 63,122,000 |
| Other Cattle, | 487,000 | 16,916,000 |
| Sheep, | 507,000 | 4,918,000 |
| Swine, | 727,000 | 13,813,000 |
| Poultry, | 17,466,000 | 22,007,000 |
| Total, | | $166,695,000 |

As pointed out in the report a year ago, great strides have been made during the recent years in the prevention and control of many of the most serious and destructive diseases of Pennsylvania's flocks and herds. A plan has been adopted for the prevention and control of bovine infectious abortion. Hog cholera has been practically controlled as a menace to the hog industry. The big risks connected with bovine tuberculosis are being rapidly eliminated. A method for the prevention and eradication of tuberculosis in poultry has been inaugurated. In poultry, sheep, and swine, parasites which are causing heavy losses are being given careful study.

To efficiently carry out its duties the Bureau of Animal Industry is divided into divisions as follows: tuberculosis eradication, meat hygiene, laboratories, stallion enrollment and miscellaneous diseases

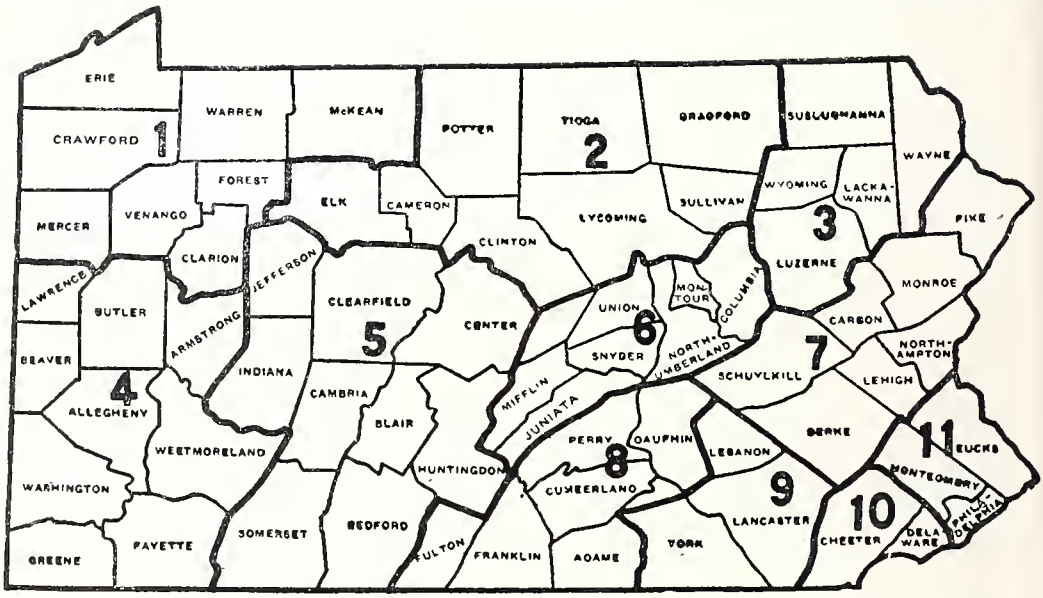


Fig. 3. To protect livestock against transmissible disease the State is divided into 11 districts with a representative of the Bureau of Animal Industry in charge of each.

and dog law enforcement. A director is in charge of the Bureau and is responsible to the Secretary of Agriculture for the successful functioning of the Bureau. A division head is in charge of each division and is responsible to the Bureau Director for the administration of the work of such division.

## Tuberculosis Eradication

Tuberculosis is one of the common and destructive diseases of livestock in Pennsylvania. There is also very general acceptance of the fact that a substantial percentage of those affected by tuberculosis, particularly children, have acquired the disease through tuberculous animals. As a protection against this and other contagious diseases, the progress of milk pasteurization has been developed to a high stage of perfection. However, the Pennsylvania Department of Health estimates that only about one-half of our population has access to

pastuerized milk. The other half, particularly those in the rural districts, especially the farm boys and girls, and those in the small centers of population, are drinking unpastuerized milk and are daily subject to the danger of acquiring tuberculosis.

Due largely to the great increase in the appropriation for indemnity made by the Legislature and the adoption of the area plan for testing cattle, the most rapid progress in the tuberculosis eradication work in the history of the State has been made during the past few years. A total of 396,435 cattle were tuberculin tested in 1926 as compared with 382,204 in 1925, 246,244 in 1924, 186,170 in 1923, and 78,308 in 1922. Table 4 shows the progress of the work since 1896.

Beginning in April, 1923, tuberculin testing was started on an area basis. Under the area plan, all the cattle in an area of one or more townships are tested at one time and followed up by the necessary retesting, with practically tuberculosis-free areas resulting. By January 1, 1927, testing on an area basis progressed to a point where the

Fig. 4. Sanitary quarters are essential in disease control.

herds in 531 townships of 45 counties had received at least one test. In seven of these counties, the disease has been reduced to less than one-half of one per cent and the counties are now designated as "modified accredited areas." Four other counties have completed the tests and will soon be "modified."

TABLE 4. Total Number of Tuberculin Tests of Cattle in Pennsylvania Under Official and Unofficial Plans—Calendar Years, 1896-1926[1]

| | Total Tuberculin Tests | | Cattle Reacting to Test | | Tested Herds Freed of Tuberculosis | |
|---|---|---|---|---|---|---|
| | of Herds | of Cattle | Reactors | Per Cent | Clean Herds | Per Cent |
| Year | | | | | | |
| 1896, | 432 | 5,430 | 1,191 | 21.9 | 187 | 44 |
| 1897, | 626 | 7,613 | 1,099 | 14.0 | 298 | 47 |
| 1898, | 582 | 5,316 | 1,062 | 17.8 | 220 | 37 |
| 1899, | 429 | 6,443 | 1,107 | 17.1 | 158 | 36 |
| 1900, | 651 | 2,473 | 1,314 | 15.5 | 254 | 38 |
| 1901, | 545 | 8,662 | 1,205 | 13.8 | 235 | 43 |
| 1902, | 375 | 6,066 | 1,024 | 16.8 | 143 | 37 |
| 1903, | 337 | 5,573 | 1,060 | 19.0 | 132 | 38 |
| 1904, | 332 | 5,159 | 891 | 17.0 | 144 | 44 |
| 1905, | 529 | 7,774 | 1,179 | 15.1 | 290 | 54 |
| 1906, | 723 | 7,079 | 901 | 13.8 | 262 | 36 |
| 1907, | 402 | 7,153 | 905 | 13.2 | 171 | 42 |
| 1908, | 501 | 7,083 | 1,037 | 14.6 | 264 | 52 |
| 1909, | 731 | 9,942 | 1,440 | 14.4 | 410 | 56 |
| 1910, | 1,085 | 13,288 | 1,810 | 13.6 | 617 | 56 |
| 1911, | 1,109 | 13,403 | 1,334 | 6.9 | 695 | 62 |
| 1912, | 1,534 | 20,534 | 2,424 | 11.3 | 898 | 58 |
| 1913, | 1,308 | 17,101 | 1,346 | 7.8 | 931 | 71 |
| 1914, | 1,252 | 15,901 | 1,077 | 6.7 | 900 | 71 |
| 1915, | 808 | 15,117 | 897 | 6.8 | 672 | 77 |
| 1916, | 1,217 | 12,244 | 1,996 | 10.3 | 870 | 68 |
| 1917, | 1,232 | 17,394 | 1,986 | 11.5 | 751 | 60 |
| 1918, | 1,105 | 15,698 | 1,644 | 10.4 | 698 | 63 |
| 1919, | 2,265 | 30,149 | 2,438 | 8.0 | 1,543 | 68 |
| 1920, | 2,100 | 31,393 | 2,802 | 8.9 | 1,399 | 66 |
| 1921, | 2,515 | 37,196 | 3,391 | 9.1 | 1,635 | 65 |
| 1922, | 5,393 | 78,308 | 3,845 | 4.9 | 4,093 | 75 |
| 1923, | 17,038 | 186,170 | 7,498 | 4.0 | 15,773 | 91 |
| 1924, | 28,429 | 246,266 | 6,697 | 2.7 | 26,109 | 91 |
| 1925, | 47,491 | 382,204 | 24,444 | 6.3 | 39,972 | 84 |
| 1926, | 49,653 | 396,435 | 21,650 | 5.5 | 43,907 | 86 |

(1) A cumulative record of the actual number of cattle tested for tuberculosis. This does not include cattle brought into Pennsylvania required to be tuberculin tested.
From 1896 to 1926 inclusive a total of 1,618,567 cattle were tested. The average number of reacting cattle during this period was 6.3%.

The eradication of bovine tuberculosis throughout the State is in sight, providing sufficient money for testing and indemnity is made available within the next few years. On the basis of present operations, it is expected that approximately one-half of the cattle in the State will be tuberculin tested by June 1, 1927. Taking the results so far accomplished in the establishment and maintenance of tuberculosis-free herds and assuming that there will be sufficient money available for maintenance and indemnity it is estimated that tuberculosis will be practically eliminated from the State within the next few years.

In an attempt to keep the areas more free of tuberculosis from additional infection in the future, the Bureau of Animal Industry is urging cattle owners to buy healthy cattle when adding to their herds or replacing animals condemned because of tuberculosis.

The Bureau recommends that cattle owners endeavor to breed and raise more good cattle and where it is necessary to buy animals it is urged that purchases be made from accredited herds or herds that have passed at least one tuberculin test. Failure on the part of owners to give consideration to the health of the animals they buy may result in introducing tuberculosis infection into clean herds.

It is entirely possible for owners to purchase safe cattle, the Bureau points out, for the reason that throughout the United States

## TABLE 5. Herds and Cattle Under Official Supervision i. e., Modified Accredited Area and Individual Accredited Herd Plans in Pennsylvania as of December 31, 1926

| County | Under Supervision Individual Accredited Herd Plan | | Total Number of Townships | Under Supervision Modified Accredited Area Plan | | | Total Under Supervision | | Number of Cattle Including Calves on Farms (1) Jan. 1, 1927 |
|---|---|---|---|---|---|---|---|---|---|
| | Number of Herds | Number of Cattle | | Townships Tested | Number of Herds | Number of Cattle | Number of Herds | Number of Cattle | |
| Total, | 8,152 | 119,051 | 1,566 | 531 | 75,469 | 451,536 | 83,621 | 570,587 | 1,340,000 |
| Adams | 34 | 438 | 21 | | | | 34 | 438 | 19,870 |
| Allegheny, | 157 | 2,586 | 56 | | | | 157 | 2,586 | 18,760 |
| Armstrong, | 307 | 2,208 | 27 | | | | 307 | 2,208 | 17,390 |
| Beaver | 189 | 2,140 | 27 | 15 | 1,873 | 5,874 | 2,062 | 8,014 | 12,160 |
| Bedford, | 510 | 4,671 | 25 | 1 | 146 | 1,365 | 656 | 6,036 | 25,410 |
| Berks, | 114 | 2,058 | 44 | | | | 114 | 2,058 | 41,470 |
| Blair, | 141 | 1,539 | 10 | 5 | 599 | 4,586 | 740 | 6,125 | 12,000 |
| Bradford, | 420 | 8,252 | 37 | 10 | 1,575 | 16,267 | 1,995 | 24,519 | 50,360 |
| Bucks, | 176 | 3,319 | 30 | | | | 176 | 3,319 | 30,110 |
| Butler (2), | 163 | 2,209 | 33 | 33 | 4,207 | 21,812 | 4,370 | 24,021 | 21,690 |
| Cambria, | 191 | 2,272 | 30 | | | | 191 | 2,272 | 12,990 |
| Cameron (2), | | | 5 | 5 | 255 | 945 | 255 | 945 | 870 |
| Carbon, | 74 | 700 | 12 | | | | 74 | 700 | 3,480 |
| Centre, | 311 | 5,114 | 25 | 4 | 390 | 3,414 | 701 | 8,528 | 20,660 |
| Chester, | 181 | 3,879 | 57 | 4 | 459 | 2,509 | 640 | 6,388 | 53,180 |
| Clarion, | 42 | 398 | 22 | 17 | 2,368 | 13,710 | 2,410 | 14,108 | 18,610 |
| Clearfield (2), | 20 | 237 | 30 | 30 | 5,324 | 14,884 | 5,344 | 15,121 | 11,890 |
| Clinton, | 8 | 165 | 21 | 3 | 332 | 2,389 | 340 | 2,554 | 6,850 |
| Columbia, | 137 | 1,474 | 23 | 20 | 2,133 | 9,722 | 2,270 | 11,196 | 13,200 |
| Crawford (2), | 19 | 635 | 35 | 35 | 5,693 | 48,376 | 5,712 | 49,011 | 50,680 |
| Cumberland, | 163 | 1,918 | 20 | | | | 163 | 1,918 | 22,810 |
| Dauphin, | 33 | 520 | 23 | | | | 33 | 520 | 19,230 |
| Delaware, | 44 | 1,822 | 21 | | | | 44 | 1,822 | 7,100 |
| Elk, | 37 | 436 | 10 | 8 | 1,132 | 4,693 | 1,169 | 5,129 | 4,710 |
| Erie | 112 | 2,588 | 21 | 14 | 3,059 | 23,186 | 3,171 | 25,774 | 42,450 |
| Fayette, | 54 | 998 | 24 | 7 | 2,066 | 5,911 | 2,120 | 6,909 | 15,900 |
| Forest, | | | 8 | 6 | 413 | 1,451 | 413 | 1,451 | 1,730 |
| Franklin, | 311 | 3,166 | 15 | 9 | 2,246 | 13,731 | 2,557 | 16,897 | 26,840 |
| Fulton, | 11 | 156 | 11 | | | | 11 | 156 | 7,650 |
| Greene, | 22 | 423 | 18 | | | | 22 | 423 | 18,990 |
| Huntingdon, | 65 | 1,155 | 30 | 27 | 1,992 | 11,466 | 2,057 | 12,621 | 14,590 |
| Indiana (2), | 76 | 1,563 | 24 | 24 | 4,493 | 18,849 | 4,569 | 20,412 | 18,290 |
| Jefferson (2), | 30 | 335 | 23 | 23 | 3,720 | 13,107 | 3,750 | 13,442 | 11,680 |
| Juniata, | 147 | 1,661 | 13 | 4 | 338 | 2,359 | 485 | 4,020 | 10,570 |
| Lackawanna, | 81 | 1,778 | 19 | | | | 81 | 1,778 | 12,300 |
| Lancaster, | 199 | 3,044 | 41 | 2 | 212 | 784 | 411 | 3,828 | 84,820 |
| Lawrence, | 195 | 3,333 | 17 | 17 | 2,293 | 15,185 | 2,488 | 18,518 | 17,410 |
| Lebanon, | 74 | 1,191 | 19 | | | | 74 | 1,191 | 19,520 |
| Lehigh, | 58 | 975 | 15 | | | | 58 | 975 | 14,150 |
| Luzerne, | 27 | 585 | 35 | 5 | 722 | 3,201 | 749 | 3,786 | 12,400 |
| Lycoming, | 128 | 1,994 | 42 | | | | 128 | 1,994 | 24,890 |
| McKean (2), | 38 | 598 | 15 | 15 | 1,811 | 9,928 | 1,849 | 10,526 | 8,670 |
| Mercer (2), | 39 | 751 | 32 | 32 | 4,431 | 32,521 | 4,470 | 33,272 | 33,100 |
| Mifflin, | 74 | 1,226 | 10 | 3 | 392 | 3,029 | 466 | 4,255 | 11,320 |
| Monroe, | 82 | 680 | 16 | 3 | 270 | 1,046 | 352 | 1,726 | 6,880 |
| Montgomery, | 144 | 2,712 | 37 | 1 | 59 | 164 | 203 | 2,876 | 23,740 |
| Montour, | 109 | 1,248 | 9 | | | | 109 | 1,246 | 6,040 |
| Northampton, | 33 | 401 | 18 | | | | 33 | 401 | 13,840 |
| Northumberland, | 112 | 1,245 | 24 | 8 | 902 | 5,784 | 1,014 | 7,029 | 14,700 |
| Perry, | 85 | 951 | 20 | 1 | 30 | 209 | 115 | 1,160 | 14,250 |
| Philadelphia | 10 | 242 | | | | | 10 | 242 | 990 |
| Pike, | 12 | 145 | 11 | | | | 12 | 145 | 2,780 |
| Potter, | 57 | 755 | 24 | 24 | 1,872 | 15,928 | 1,929 | 16,683 | 17,080 |
| Schuylkill, | 75 | 961 | 37 | | | | 75 | 961 | 13,130 |
| Snyder, | 196 | 2,012 | 15 | 4 | 368 | 2,452 | 564 | 4,464 | 10,110 |
| Somerset, | 334 | 3,550 | 25 | 5 | 1,133 | 6,541 | 1,467 | 10,091 | 32,380 |
| Sullivan | 134 | 1,699 | 9 | | | | 134 | 1,699 | 6,520 |
| Susquehanna, | 252 | 5,309 | 27 | 23 | 2,489 | 28,024 | 2,741 | 33,333 | 38,420 |
| Tioga, | 211 | 3,246 | 29 | 17 | 2,400 | 25,973 | 2,611 | 29,219 | 38,360 |
| Union, | 72 | 938 | 10 | 10 | 1,146 | 7,652 | 1,218 | 8,590 | 10,580 |
| Venango, | 106 | 1,585 | 21 | 18 | 2,091 | 10,254 | 2,197 | 11,839 | 11,830 |
| Warren, | 37 | 1,197 | 23 | 10 | 1,493 | 12,435 | 1,530 | 13,632 | 17,140 |
| Washington, | 167 | 3,407 | 33 | 7 | 1,441 | 7,905 | 1,608 | 11,312 | 34,950 |
| Wayne, | 190 | 3,704 | 22 | 1 | 127 | 1,086 | 317 | 4,790 | 31,100 |
| Westmoreland, | 200 | 2,477 | 23 | 12 | 3,433 | 13,607 | 3,633 | 16,084 | 33,380 |
| Wyoming, | 100 | 1,904 | 18 | 3 | 268 | 2,001 | 368 | 3,905 | 11,980 |
| York, | 222 | 2,173 | 35 | 6 | 1,273 | 5,221 | 1,495 | 7,394 | 47,580 |

(1) Estimates of Pennsylvania Federal-State Crop Reporting Service.
(2) Tuberculosis has been reduced in the county to less than one-half of one per cent (0.5%) which places the county in the Modified Accredited Plan.

there are more than fifteen million cattle under official supervision for tuberculosis which is more than 23 per cent of the total cattle population. In Pennsylvania there are more than 40 per cent of the dairy and breeding cattle that have been tested at least once. The State has 2,993 herds that have been accredited for at least one year, and 395 herds which have been accredited for five years or more.

## Indemnity Money Greatly Increased

More money was appropriated by the State to pay indemnity for tuberculous cattle for expenditure during the four-year period from 1923 to 1927 than in all previous years combined. The Legislature of 1923 appropriated $535,000. The Legislature of 1925 appropriated $3,000,000, out of which the Governor found sufficient available funds to approve a total of $1,799,000 from the General funds and $300,000 from the Dog Fund, in addition to $250,000 to pay accrued claims from the previous year. Table 6 gives the State and Federal tuberculosis indemnities paid by years since 1919.

TABLE 6. Federal and State Indemnities Paid for Tubercular Cattle in Pennsylvania—Five Year Totals 1896-1925, Calendar Years 1916-1926

| | State Indemnity | Federal Indemnity | Total Indemnity |
|---|---|---|---|
| Grand Total | 4,772,536.77 | 1,053,805.17 | 5,826,341.94 |
| Year | | | |
| 1896-1900 | 221,000.00 | | 221,000.00 |
| 1901-1905 | 267,000.00 | | 267,000.00 |
| 1906-1910 | 386,167.28 | | 386,167.28 |
| 1911-1915 | 744,491.73[1] | | 744,491.73[1] |
| 1916-1920 | 481,554.89 | 69,018.91[2] | 550,573.80 |
| 1916 | 117,079.64 | | 117,079.64 |
| 1917 | 141,337.97 | | 141,337.97 |
| 1918 | 68,767.67 | | 68,767.67 |
| 1919 | 112,057.80 | 7,726.67 | 119,784.47 |
| 1920 | 42,311.81 | 61,292.24 | 103,604.05 |
| 1921-1925 | 1,449,583.90 | 669,663.58 | 2,119,247.48 |
| 1921 | 85,000.00 | 74,000.00 | 159,000.00 |
| 1922 | 100,000.00 | 84,167.69 | 184,167.69 |
| 1923 | 196,054.23 | 106,959.17 | 303,013.40 |
| 1924 | 337,038.58 | 133,382.45 | 470,421.03 |
| 1925 | 731,491.09 | 271,154.27 | 1,002,645.36 |
| 1926 | 1,222,738.97 | 315,122.68 | 1,537,861.65 |

(1) Includes expenditures for foot and mouth disease outbreak.
(2) Federal Government began paying indemnity 1919.

The tuberculosis work has already progressed to a point where its benefits to the dairy industry are apparent. It is resulting in the more efficient production of milk, first because of the freedom from disease, and second because of the greater number of pure breds, especially sires which are introduced into disease-free herds. It means a more healthful product for the public as well as a better market outlet for the producer; the market is expanded for the breeding

stock as well as the dairy products. This is shown in counties where all herds have been tested by the active demand for dairy products, grade dairy cows and foundation pure bred breeding stock.

## Meat Markets and Slaughterhouses Inspected

The Bureau's work in meat inspection includes the supervision of slaughter houses and meat markets in order to safeguard the public from diseased and other unwholesome meats, the investigating and prosecuting of all violators of state laws dealing with livestock products, and the establishing of local meat inspection wherever possible.

The meat hygiene inspection work has been extended greatly during the past few years. The number of establishments examined increased from 1,424 in 1919 to 6,163 in 1925; the number of carcasses examined increased from 22,577 in 1919 to 61,550 in 1925; and the number of pounds of meat from 522,185 in 1919 to 2,282,021 in 1925. A total of 3,797 establishments, 55,728 carcasses and 912,968 pounds of meat were inspected in 1926 to December 1.

While several very serious cases of badly diseased carcasses have been found on sale and a number of filthy slaughter houses and insanitary meat markets have been found in operation and the proprietors prosecuted during the past few years, the general condition throughout the State is improved. This is indicated by the fact that in 1926 to December 1 only about 4 per cent of the meat markets were found defective, and these were markets which handle even a smaller per cent of the total meat supply of the State.

Only 4 per cent of the slaughter houses inspected in 1926 to December 1 were found defective while 476 of the 4,075 slaughter houses, or 11 per cent, were found defective and 241 were ordered closed after second notice in 1925; the number defective in 1925 was about 3 per cent less than in 1924. It must be remembered that a large portion of meat and meat products come from the large packing establishments which have careful Federal inspection of animals when slaughtered. The enforcement of the State meat hygiene law concerns the numerous slaughter houses in Pennsylvania, each of which may not be the source of great quantities of meat but are nevertheless important from the standpoint of protecting the public health.

While the greater portion of slaughter house proprietors are interested in giving the public a clean, wholesome product, an unscrupulous butcher is occasionally found who is so unprincipled that he will maintain the most filthy slaughtering plant imaginable and knowingly sell diseased meats. Several butchers have been fined $150 to $250 during the past two years for attempting to sell meat from diseased cows, and other cases are now pending in the courts. Cases such as these are promptly taken care of so that the public is protected.

Table 7 gives a summary of the meat hygiene work from January 1, 1919 to December 1, 1926.

TABLE 7. Meat and Carcass Inspection

| Year | Estab's Examined | Carc.'s Exam'd Passed | Carc.'s Exam'd Cond. | Meats Exam'd Passed lbs. | Meats Exam'd Cond. lbs. |
|---|---|---|---|---|---|
| 1919 | 1,424 | 22,577 | 417 | 522,185 | 5,903 |
| 1920 | 1,410 | 11,943 | 288 | 508,680 | 8,415 |
| 1921 | 1,732 | 24,890 | 540 | 435,235 | 330 |
| 1922 | 2,370 | 17,371 | 605 | 709,799 | 1,595 |
| 1923 | 2,326 | 37,153 | 739 | 738,393 | 835 |
| 1924 | 4,152 | 50,588 | 714 | 943,113 | 6,711 |
| 1925 | 6,163 | 61,550 | 1,466 | 2,282,021 | 5,405 |
| *1926 | 3,797 | 55,728 | 2,235 | 912,968 | 5,667 |

*To December 1, 1926.

Meat Market Inspection

| Year | Number Examined | No. Defective 1st examination | No. Defective 2nd examination | Number Closed |
|---|---|---|---|---|
| 1919 | 704 | 52 | 21 | ---------- |
| 1920 | 618 | 65 | 23 | ---------- |
| 1921 | 440 | 31 | 5 | ---------- |
| 1922 | 744 | 71 | 25 | 2 |
| 1923 | 876 | 66 | 28 | 2 |
| 1924 | 1,638 | 71 | 72 | 10 |
| 1925 | 2,050 | 71 | 71 | 34 |
| *1926 | 859 | 36 | 36 | 6 |

*To December 1, 1926.

Slaughter House Inspection

| Year | Number Examined | No. Defective 1st examination | No. Defective 2nd examination | Number Closed |
|---|---|---|---|---|
| 1919, | 720 | 38 | 3 | ---------- |
| 1920 | 792 | 44 | 35 | 7 |
| 1921 | 1,292 | 63 | 11 | ---------- |
| 1922 | 1,626 | 97 | 94 | 13 |
| 1923 | 1,450 | 58 | 29 | 9 |
| 1924 | 2,441 | 340 | 331 | 117 |
| 1925 | 4,075 | 476 | 476 | 241 |
| *1926 | 2,938 | 121 | 121 | 48 |

*To December 1, 1926.

## Bovine Infectious Abortion Control

The Bureau of Animal Industry has been making studies of abortion and sterility in cattle for a number of years and since 1921 has been conducting control work under a definite plan. It is estimated that the average loss to a farmer on each cow suffering from abortion

is from $60 to $75 per year, and the total annual loss in the State is more than $5,000,000. This makes the disease one of great economic importance. The Pennsylvania plan for the prevention, control and eradication of abortion consists of blood tests in conjunction with proper sanitation. Data at hand show that it is practically impossible to control abortion by sanitary measures alone as long as infected animals are permitted to remain in the herd. In addition to sanitary measures, the proper use of blood tests and the elimination of reactors are necessary. Full details of the Pennsylvania Plan as well as other important information on abortion are given in General Bulletin No. 404 of the Department, published in 1925.

Great interest has been shown in the Pennsylvania plan during the past few years, making it necessary to expand the personnel and facilities for handling the work. One indication of this interest is the fact that 50 per cent more blood samples were submitted in 1925 for seriological test for the diagnosis of the abortion disease than in 1924 and in 1926 to December 1 almost three times more than in 1924. Seven herds have been issued certificates as abortion-free herds and 234 additional herds are under observation. During the year 1925, 4,464 animals were examined for abortion, which divulged 2,247 positive cases and 430 suspects. This work required the taking and examining of 9,550 samples of blood. In 1926 to December 1, a total of 4,837 animals were examined and 12,179 blood tests revealed 1,822 positive cases and 708 suspects. The Bureau is working with the herds at the State Institutions and is endeavoring to free the infected herds from infectious abortion disease in order that milk production and breeding at these farms will be brought to the highest state of efficiency.

Herds in which the plan has been properly carried out have been unusually successful in controlling and eradicating the disease. This control is a most encouraging factor in present day cattle breeding since it greatly reduces the risks and losses in breeding and stimulates the keeping of better livestock. Investigational work on the disease is now progressing at the Bureau's experimental farm in addition to the farms already mentioned.

**TABLE 8. Summary of Infectious Abortion Work**

| Year | Herds | Animals | | Blood Samples Tested | | Suspects | Total |
|---|---|---|---|---|---|---|---|
| | | Examined | Treated | Negative | Positive | | |
| 1919 | 163 | 965 | 1,697 | | | | |
| 1920 | 185 | 5,113 | 400 | | | | |
| 1921 | 95 | 1,753 | 432 | | | | |
| 1922 | 164 | 4,568 | 249 | | | | |
| 1923 | 113 | 3,026 | 69 | 2,116 | 921 | | 3,037 |
| 1924 | 150 | 2,900 | 69 | 3,502 | 1,235 | | 4,737 |
| 1925 | 234 | 4,464 | 11 | 6,873 | 2,247 | 430 | 9,550 |
| *1926 | 354 | 4,837 | 27 | 9,649 | 1,822 | 708 | 12,179 |

*To December 1, 1926.

## Hog Cholera Control

It is estimated that about 75 per cent of the farms in the State have swine and that the total valuation of the swine industry on January 1, 1926, was approximately $13,813,000. This makes a disease such as hog cholera one of general concern to Pennsylvania farmers.

Hog cholera is extremely infectious and a high rate of mortality usually follows infection. In infected herds, from 90 to 100 per cent of the hogs die if precautions are not exercised in the early stages of the outbreak. On the other hand, in herds which have been protected by proper vaccination and sanitary measures, only from 2 to 4 per cent die of the disease.

The effective method and procedure in the control of hog cholera adopted by the Bureau, has been continued during the period covered by this report.

From January 1, 1924, to December 1, 1926, a total of 129,155 hogs were vaccinated as a preventative of cholera. Of this number only 902 or less than one per cent died after vaccination. During the same period, a total of 13,499 hogs were vaccinated as a result of a reported outbreak of cholera on the premises. Of this number 2,580 or 19 per cent died after vaccination. The value of prompt vaccination is readily apparent when it is realized that from 90 to 100 per cent of the hogs die in infected herds when proper precautions are not taken as already stated. Such figures show that when proper precautions are taken, the risk from hog cholera can be practically eliminated as a menace to the hog industry in the State.

Every possible precaution is taken to make sure that the anti-hog cholera serum used in the control of hog cholera is a pure potent product. The Bureau has a contract with a laboratory to furnish the clear, concentrated anti-hog cholera serum and hog cholera virus. This serum and virus is received by the Bureau and each lot is tested for purity and potency before it is distributed to veterinarians for use in swine herds. This practice assures not only a pure product, but the cost is lower than if the product were purchased by the individual.

While an epizootic of hog cholera occurred during 1926 in the middle west, the situation remained normal in Pennsylvania. Farmers were urged to continue having their hogs vaccinated as a preventative of hog cholera, and to exercise great care in buying swine. Swine breeders and feeders were cautioned about buying hogs unless the source is known to be free of hog cholera.

Farmers in this State were fortunate in having a supply of anti-hog cholera serum and virus available when requested and at a minimum cost. This arrangement made it possible for Pennsylvania to have all the anti-hog cholera serum for which there was a demand, in spite of the fact that most of the states found it very difficult to secure serum even at a price considerably above normal.

Another factor in keeping the hog cholera situation normal in Pennsylvania was the fact that a larger per cent of the swine growers keep their hogs vaccinated than in most other sections of the country. Average figures indicate that the number of Pennsylvania farmers who keep their hogs vaccinated is at least two per cent above the average for the nation.

## Serious Transmissible Diseases Controlled

Transmissible disease prevention service is rendered livestock owners throughout the State. The emphasis is placed upon educational work on disease prevention and control of parasites. The fact that anthrax, blackleg and hemorrhagic septicemia may be prevented by vaccination has been stressed in every possible way. Human lives are also subject to anthrax and glanders which makes the immediate control of such diseases extremely important.

Owners of livestock living on premises on which outbreaks of anthrax, blackleg and hemorrhagic septicemia have occurred in previous years are warned annually by letter from this Bureau about vaccinating their animals against these diseases before they are turned on pasture.

## Progress in Poultry Disease Control

The poultry industry of Pennsylvania is valued at approximately $22,000,000. The industry is represented by a total of 17,466,000 hens and pullets which produced 76,535,000 dozen eggs valued at $28,500,000 in 1925. It is likewise estimated that over 93 per cent of the farms have poultry.

**Tuberculosis in Poultry.** Important steps have been taken in the control of several extremely serious poultry diseases. Tuberculosis in poultry has been given special study by the Bureau since 1922. During the period from July, 1922, to October, 1925, 9,453 tests were made and of this number 1,131 or about 12 per cent reacted. In 1925, 12 flocks, totalling about 2,500 chickens, were tested. The results of those tests made it desirable to develop a definite plan for handling avian tuberculosis on a flock basis. With this in mind, the Bureau developed a plan in 1925 which includes the following features:

The extent of the infection is determined by tuberculin test and autopsy. All diseased fowls are removed and slaughtered under official supervision. The premises are then cleaned thoroughly and disinfected. Re-tests are made at the end of 60 or 90 days. If reactors are then found, the flock is given another test in six months. After all evidence of the tuberculosis is gone, the flock is tested annually. All owners of flocks are expected to practice careful breeding, correct feeding, proper flock management and good sanitation. A certificate is issued to owners who agree to follow the Pennsylvania plan in detail and whose fowls have passed two annual negative tuberculin tests.

**Other Diseases.** In addition to the Bureau's activities in controlling fowl pest, many investigations of poultry troubles were carried out by the Bureau's field veterinarians and the laboratory force.

The demand for services in handling transmissible poultry diseases and the blood test for the diagnosis of bacillary white diarrhea in chickens became so great that it was found necessary to assign two of the veterinary agents of the Bureau to poultry work. Part of their time is spent in the Philadelphia Laboratory and part in the field assisting in collecting blood from chickens for test and making field investigations in outbreaks of transmissible poultry diseases.

The Accredited Hatchery Plan inaugurated in the State in 1925 provides in part that all the birds in the flocks working under this plan for accreditation must have a blood test for bacillary white diarrhea, a serious chick disease which causes heavy mortality. This disease is transmitted from the laying hen to the chick through the egg. Therefore, testing the blood of the hen and eliminating those carrying the disease greatly reduces the loss in chicks. During 1925, 11,779 chickens were tested and in 1926, the number increased to approximately 32,126 birds.

## State Institutions Served by Bureau

There are 16 State institutions which are maintained wholly by State appropriations. These institutions have extensive herds of livestock and flocks of poultry. The Bureau is charged with the prevention, control, and eradication of transmissible diseases from these herds and flocks. The cattle are tuberculin tested by the Bureau and every precaution is taken against infectious abortion, hog cholera and similar diseases.

## Dog Law Effectively Enforced

The rigid enforcement of the Pennsylvania Dog Law by the Bureau has resulted in approximately 498,000 licensed dogs in 1926 as compared to 294,461 in 1921 when the enforcement was in the hands of County officials. The number of licenses in 1925 was 479,222.

The present dog law became effective January 15, 1922, and each year since, the licensed dog population of the State has increased greatly. As a result of the close check-up on the unlicensed and uncontrolled dogs, human lives, good dogs, livestock and poultry have enjoyed greater protection, and the great menace of the uncontrolled dog to the sheep industry has been lessened.

In order to accomplish this effective work in enforcing the dog law, 20 dog law enforcement districts are maintained with at least one regular agent working in each. Besides these regular agents two traveling squads are employed which work principally in rural and sheep raising sections. Check-ups were made both day and night in an effort to reduce losses by uncontrolled dogs.

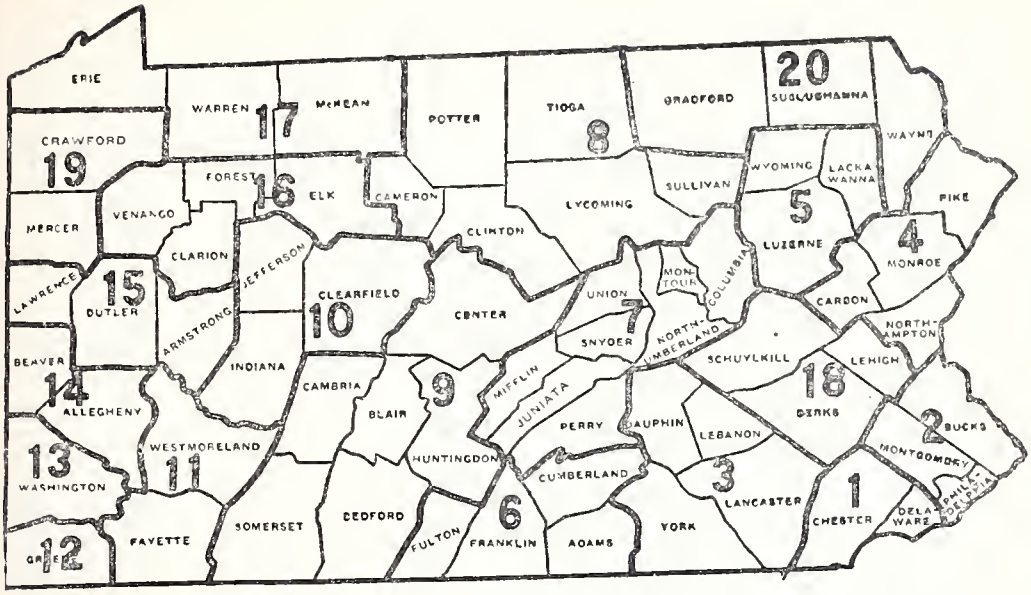


Fig. 5. In order to rigidly enforce the Dog Law, the State is divided into 20 districts.

During 1925, a total of 6,204 sheep were either killed or injured and $50,888 was paid for the damage done. Other livestock and poultry killed or injured for which damages were paid included 4,923 head of poultry, 165 domesticated hares, 51 hogs, 29 cattle, 2 goats and 1 horse. This shows that practically all classes of livestock and poultry suffer from attacks by dogs. A total of 12,975 dogs were killed during the year, owners of dogs settled for damages to the extent of $3,976 and a total of 7,866 prosecutions were brought.

During the first eleven months of 1926, a total of $75,807 was paid as a result of damage done by dogs in sheep and poultry flocks. During the same period 15,955 dogs were killed, owners of dogs settled for damages to the extent of $3,312.90, and a total of 8,614 prosecutions were brought.

An increase in the amount paid out for damages is shown for 1926. This is largely caused by the increased amount paid out for poultry. This increase in the poultry damages is not due to an increase in the actual losses, but to the more general knowledge that compensation for such losses can be obtained.

## State Supreme Court Upholds Dog Law

The State Supreme Court, in a decision handed down on January 3, 1927, upheld the constitutionality of the Pennsylvania Dog Law of 1921. This is the final chapter in the much-talked-of Haldeman case which started on August 25, 1924, when R. C. Haldeman of Harrisburg was fined for harboring two dogs which did not have license tags on their collars as required by the law.

At a hearing before the Justice of the Peace Coble in Wormleysburg, Cumberland County, Haldeman was found guilty and fined $5.00 and costs. Haldeman appealed the case to the court of quarter sessions of Cumberland County, contending that the Dog Law was unconstitutional for nine different reasons. The case was argued before the court and on February 13, 1926, Judge E. M. Biddle, Jr. handed down his decision upholding the constitutionality of the law in every detail.

Mr. Haldeman immediately entered an appeal from the decision of the Cumberland county court to the Superior Court of Pennsylvania which sustained the decision of the lower court. Again the

Fig. 6. Rigid enforcement of the Dog Law makes Pennsylvania a safer place for sheep.

case was appealed,—this time to the Supreme court of the State from which came the recent decision which should settle for all times and all persons the constitutionality of the Dog Law.

This decision is extremely important since it settles once for all the question of the necessity of dog owners in Pennsylvania having license tags displayed on the collars of their dogs. Without tags being thus displayed, it would be impossible to enforce the law.

## Control of Rabid Dogs

In addition to the licensing of dogs and the elimination of stray, unlicensed dogs, the Bureau keeps a close tab on all rabid dogs reported in the State. As soon as a rabid dog is reported, the

Bureau makes an investigation and places under individual quarantine all exposed dogs or other animals. A laboratory examination of the brain of the rabid dog is made and if a diagnosis of rabies is definitely established, any person bitten is instructed to consult their physician as to the advisibility of taking the Pasteur treatment.

In 1926 due to the prevalence of rabies throughout the United States, there has been an increase in number of rabies cases throughout Pennsylvania. These outbreaks have been controlled by individual quarantine supplemented by the rigid enforcement of the Pennsylvania Dog Law. Previous to 1926 there had been a very noticeable decrease in the number of rabies cases, number of animals exposed and persons bitten and number of animals destroyed throughout the State each year. This decrease was very largely due to the Bureau's method of controlling this disease and the cooperation of the veterinary practitioners, livestock owners, municipal authorities, civic organizations and the enforcement of the Pennsylvania Dog Law.

## Stallion Enrollment

The Bureau is charged with the enforcement of the Stallion Enrollment Law which includes inspection as to breed, soundness and confirmation of registered stallions and jacks, that stand for public service in the State.

Records indicate a decrease in the number of stallions licensed during recent years. In 1919, 692 were licensed; in 1920, 565; 1921, 458; 1922, 408; 1923, 351; 1924, 270; 1925, 255; and 1926, 257.

There are approximately 393,000 horses valued at $39,693,000 on farms in Pennsylvania. This number has been decreasing steadily during recent years which with the facts revealed by the Stallion Enrollment work during the past few years, indicates a real opportunity for breeding good draft horses in the State.

## Animal Specimens Examined

Specimens from all kinds of animals are examined by the Bureau at its Philadelphia laboratories. These examinations are extremely valuable in the Bureau's diagnostic and research work with transmissible live stock and poultry diseases.

Specimens are received from practicing veterinarians in all parts of Pennsylvania. Examinations are made of these specimens by many various methods and the results, together with recommendations, are sent to the veterinarians. This is one of the methods used by the Bureau in preventing, controlling and eradicating transmissible livestock and poultry diseases.

During the year specimens were received and reported in such a manner from 64,180 individual animals and fowls. These specimens were received from cows, horses, mules, swine, sheep, dogs, cats, chickens, ducks, geese, grouse, canaries, parrots, goats, rabbits, guinea pigs, foxes, deer, zebras and skunks.

Some livestock and poultry diseases are difficult to diagnose. Laboratory examinations are quite often very helpful in determining a correct diagnosis as well as in giving proper advice in handling outbreaks of transmissible diseases. Laboratory examination is also of considerable use in arriving at correct methods of handling live stock and poultry production, and for the purpose of maintaining healthy herds and flocks.

Veterinarians from the Laboratories also investigate, with the local practicing veterinarians, animal and poultry diseases under field conditions where a laboratory investigation is needed, and where it is thonght such aid will help the livestock and poultry industries.

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## Bureau of Foods and Chemistry

The activities of the Bureau of Foods and Chemistry consists of the enforcement of twenty-five separate laws, including the General Food Act and special acts regulating the sale of all foods and ingredients entering into the composition of foods and six laws providing for the supervision of the sale of agricultural products, which include commercial fertilizers, feeding stuffs, lime products, paints and oils and insecticides and fungicides. The food laws in particular are broad in their scope and application and afford protection to every citizen of the State against the sale of unwholesome, adulterated and misbranded foods. They are more complete and effective than the National Law and those of many states because they specifically prohibit the use in foods of preservatives and ingredients deleterious to health.

Every food-dispensing place in the State, milk distributing and bottling plant, large or small, come under the Bureau's supervision and the energetic activities of the agents in the field, to whom is assigned the special duty of preventing, as far as possible, the sale of unlawful foods, makes it possible by means of the proper enforcement of these several acts to give full assurance to consumers that the foods purchased will be of the highest purity and meet all legal requirements.

### New Laws Give More Adequate Protection

For many years the Bureau has been constantly in action to assure the sale of wholesome foods and protect the public health and the agents in the field are always on the alert to discover violations of any character. The more recent food laws enacted by the Legislature of 1925, which included the carbonated beverage, milk testing, milk container and oyster laws, have made it possible to materially improve the character of the beverages sold in the State, to assure the producers of milk correct and full payments for the milk supplied as a basis of correct weight and Babcock tests now re-

quired to be made by licensed operators, protecting health against the sale of contaminated milk by requiring all milk sold for drinking purposes to be sold in original bottles and has prevented, to a large degree, the adulteration of oysters with water by requiring this food product to be sold by numerical count.

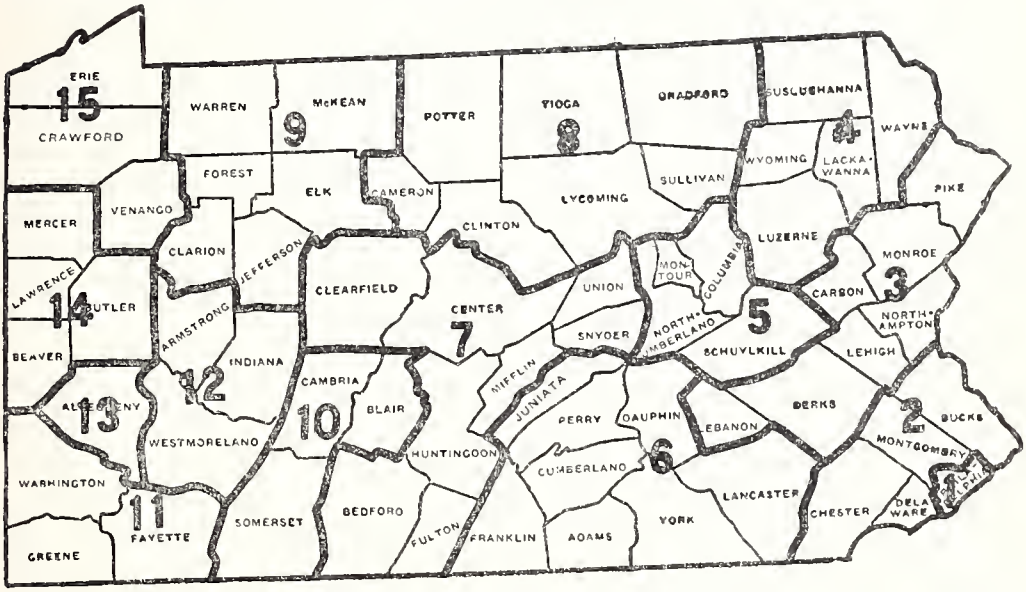


Fig. 7. The State is divided into districts for the effective enforcement of Food Laws.

This protection is afforded by means of collection and analysis of samples of products as they are being offered for sale, the inspection of licensed oleomargarine dealers and cold storage warehouses and of the sanitary condition of ice cream cabinets, which are permitted to be used only for ice cream, excluding all other food products, and by actual supervision of the sanitary conditions and methods of operation of all beverage or soft drink bottling plants.

Some idea of the analytical work performed by the Bureau may be had by referring to 135,225 samples of food products being analyzed during the 19-year period, 1907 to 1925, inclusive, which shows an average of 7,117 food products examined annually. In addition to this, the number of agricultural products examined during the same period makes a grand total of 193,803 samples of all products. During 1926, covered by this report, the food samples examined numbered 7,648 and the agricultural products examined numbered 4,738, making a total of 206,189 samples examined during 20 years. While the number of food samples examined during 1926 was less than the number for 1925, this does not mean that we have been less active in the enforcement work during 1926 but that more care was paid to the selection of samples, which would bring to light violations, in order to avoid unnecessary analytical expense. The number of prosecutions in the food cases, which were successfully terminated, was 18,933 for the 19-year period referred to, 1,358 being brought during 1925 and 1,180 for 1926.

## Food Supply Attains High Standard of Purity

Continual improvement in the food supply during the several years the Bureau has been engaged in enforcing the food laws has been noted and while the number of prosecutions necessary each year is greater than it should be it may be stated that a large proportion of these were due rather to negligence than direct intention to defraud. The principal violations noted during the year consisted of the sale of adulterated and misbranded vinegar and artificial products being sold for pure cider vinegar; jelly rolls artificially colored with a coal tar dye to give them the appearance of having been made with eggs and which contained no egg solids; alimentary pastes artificially colored; milks and creams deficient in butter fat and total

Table 9.
Samples Analyzed, Cases Terminated, Receipts and Expenditures in Enforcing Pure Food and Other Laws Relating to Agriculture, Calendar Years 1907 to 1926.

| Year | Samples Analyzed | | | Cases Terminated | | | Total Receipts | Total Expenditures |
|---|---|---|---|---|---|---|---|---|
| | Foods | Agricultural Products | Total | Foods | Agricultural Products | Total | | |
| 1907 | 7,400 | 1,211 | 8,611 | 664 | 54 | 718 | $56,361.63 | $84,624.44 |
| 1908 | 8,300 | 2,520 | 10,820 | 300 | 127 | 427 | 57,933.62 | 89,183.36 |
| 1909 | 6,200 | 2,450 | 8,650 | 797 | 61 | 858 | 89,112.15 | 99,903.76 |
| 1910 | 5,594 | 2,360 | 7,954 | 697 | 76 | 743 | 113,990.95 | 93,774.03 |
| 1911 | 8,200 | 1,413 | 9,613 | 1,029 | 45 | 1,074 | 122,880.48 | 96,599.03 |
| 1912 | 7,204 | 1,711 | 8,915 | 1,049 | 46 | 1,095 | 138,168.49 | 96,377.20 |
| 1913 | 6,846 | 1,676 | 8,522 | 1,025 | 25 | 1,050 | 175,225.76 | 90,742.18 |
| 1914 | 4,827 | 2,491 | 7,318 | 1.010 | 30 | 1,040 | 227,491.03 | 89,680.80 |
| 1915 | 8,939 | 2,254 | 11,193 | 1,165 | 26 | 1,191 | 280,773.40 | 102,910.16 |
| 1916 | 5,807 | 3,040 | 8,847 | 1,093 | 117 | 1,210 | 332,160.53 | 97,018.70 |
| 1917 | 8,701 | 4,143 | 12,844 | 1,169 | 116 | 1,285 | 408,148.73 | 102,187.58 |
| 1918 | 6,643 | 3,678 | 10,321 | 1,133 | 64 | 1,197 | 518,215.37 | 104,811.75 |
| 1919 | 6,851 | 4,191 | 11.042 | 1,007 | 203 | 1,210 | 580,582.82 | 121,169.43 |
| 1920 | 7,722 | 3,700 | 11,422 | 1,033 | 111 | 1,144 | 667,441.50 | 143.713.05 |
| 1921 | 7,422 | 4,310 | 11,732 | 1,031 | 83 | 1,114 | 656,133.01 | 140,367.16 |
| 1922 | 6,543 | 4,295 | 10,838 | 1,014 | 81 | 1,095 | 548,479.71 | 146,050.26 |
| 1923 | 6,693 | 3,881 | 10,574 | 1,195 | 128 | 1,323 | 536,331.92 | 128,330.61 |
| 1924 | 6,466 | 4,950 | 11,416 | 1,194 | 173 | 1,367 | 528,352.61 | 128,803.99 |
| 1925 | 8,867 | 4,304 | 13,171 | 1,358 | 270 | 1,628 | *734,295.52 | 144,377.71 |
| 1926 | 7,648 | 4,738 | 12,386 | 1,180 | 288 | 1,468 | 584,743.45 | 162,476.14 |
| Total | 142,873 | 63,316 | 206,189 | 20,113 | 2,124 | 22,237 | 7,356,822.68 | 2,263,101.34 |

*Includes $174,070.09 for 1684 Oleomargarine licenses for 1926.

solids; fruit juice drinks deficient in percentage of fruit juice and a few cases of decomposed meats and foods not fit for consumption; butter containing excessive moisture and several actions for the operating of unsanitary bottling plants.

In spite of the actions necessary in the cases noted of unlawful sales the general character of the food supply in Pennsylvania is good and it may be said that the great majority of food products sold throughout the State are wholesome, free from harmful preservatives, properly branded and true to label. There have been in recent years practically no foods discovered as containing poisonous or harmful preservatives with the exception of a few cases of cherries found

preserved with boric acid. The practice of preserving milk with formalin has entirely disappeared. The character of the ice creams sold is good as, with a few exceptions, they were found to be above the standard in butter fat requirement although in a few instances it was necessary to take action in the case of low grade ice creams containing very little butter fat.

The inspection of licensed oleomargarine places has resulted in proper display of cards and possessing the licenses as required, only eight actions being necessary during the year. (See Fig. 8). The cold storage warehouses were continually inspected and found to be operating in a proper manner, although a number of actions were necessary for the sale of cold storage eggs as and for fresh eggs during the season when fresh eggs brought high prices.

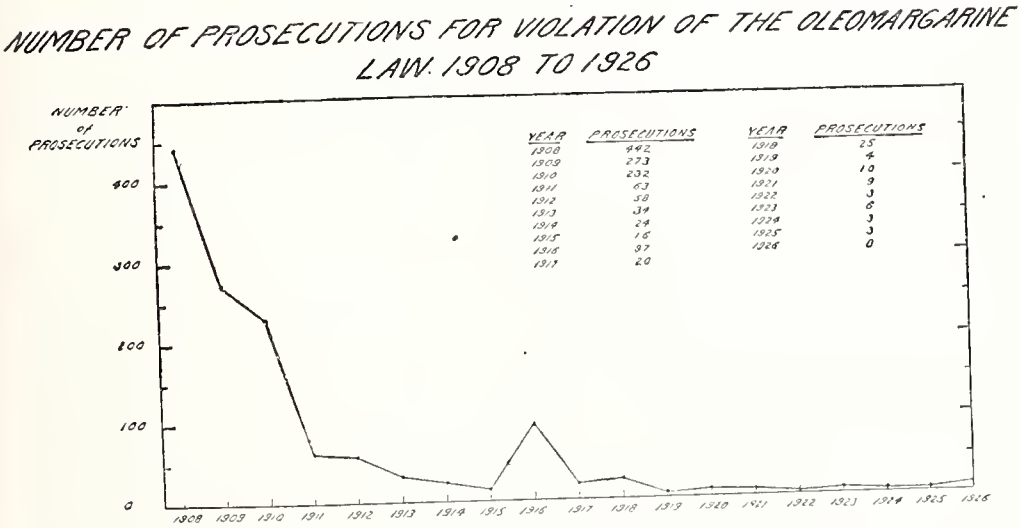


Fig. 8. Chart to illustrate the decline in number of prosecutions for violation of the Oleomargarine Law.

The inspection of plants during the year bottling carbonated beverages and the rigid enforcement of the law as to sanitary conditions has made it possible to correct all unsanitary conditions so that the plants now operating throughout the State, as a rule, are meeting the requirements, there being no plants operating in unsanitary cellars or out-buildings, which would result in contaminated drinks finding their way to the consumer. Over 100 prosecutions were necessary in the enforcement of the Beverage Law and it was necessary to close up 40 plants which could not meet the requirements. The beverage agents, especially employed for this particular service, made over 4,000 visits which included inspection of plants and inspection of the method of sales of soft drinks at agricultural fairs and carnivals, seeing to it that these drinks were dispensed in a sanitary manner and properly labelled and branded.

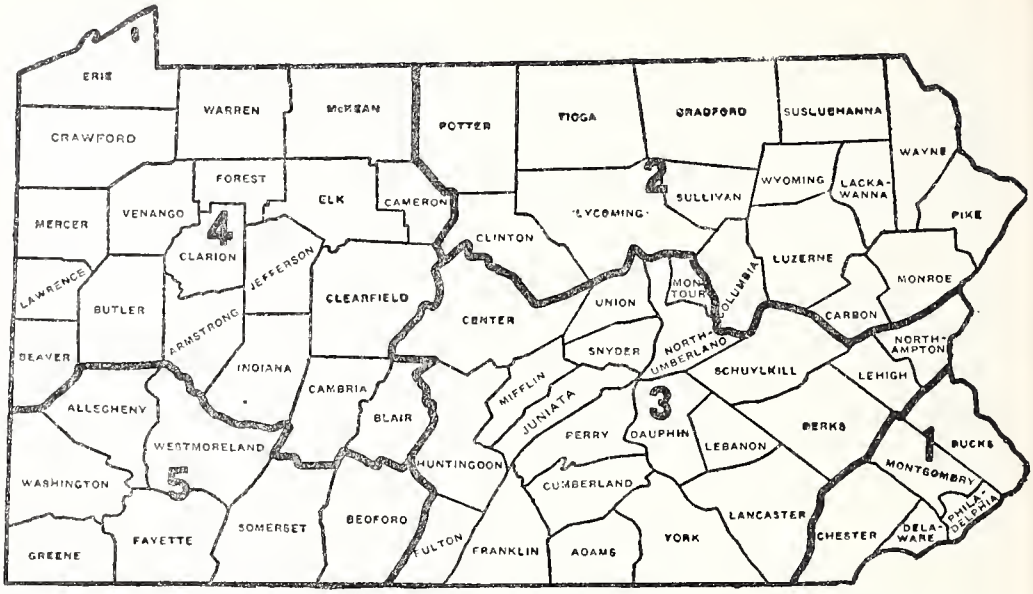


Fig. 9. Pennsylvania is divided into five districts for the enforcement of the Carbonated Beverage and Still Drinks Act.

## Complaints are Investigated and Laws Explained

In addition to the purchase of samples and the inspection of food-dispensing places for sanitary conditions and the inspection of cold storage warehouses, the agents in the field have devoted considerable time to the investigation of complaints received from time to time during the year and in answering inquiries and educational work with respect to giving information regarding the requirements of the several laws. During the year the agents made a total of 68,508 inspections and investigations as compared to 63,238 in 1925, and reports were submitted at the end of each week's work, showing the number of investigations made, samples selected and legal actions instigated and terminated. In addition to the field work and the examination of samples of food and agricultural products by the chemists a large amount of work is required in the reception and approval of applications for and the issuing of licenses for the sale of oleomargarine, cold storage warehouses, egg opening establishments, carbonated beverages, fertilizers, feeding stuffs, lime products, insecticides and fungicides, the issuing of milk and cream dealers' permits and licenses to milk testers and weighers and samplers, keeping a proper record of the moneys received and paying the same promptly to the State Treasurer.

During 1926 the number of licenses issued were as follows: Oleomargaine 3,895, cold storage warehouses 71, egg opening establishments 22, carbonated beverages 869, fertilizers 285, feeding stuffs 1214, lime products 105, insecticides and fungicides 131, milk and cream dealers' permits 1573, milk testers 1052, weighers and samplers 461. The oleomargarine licenses issued have remained fairly constant, 3919 being issued for 1925, there being 10 more for 1926.

## Fewer Brands of Fertilizer

In the enforcement of the several agricultural laws the following number of samples of products were examined during the year, which compare favorably and average close to those examined during the preceding year. The number of brands of fertilizers registered for 1926 was 1,285, compared with 1,339 for 1925. It will be of interest in this connection to report that 1926 was the first full year in which the amendment to the Fertilizer Law was in effect, prohibiting the sale of mixed fertilizers containing less than 14 per cent of total plant food. During 1925, 977 brands of mixed fertilizers were registered, 31 of which contained less than 14 per cent total plant food units, whereas for 1926 sales it will be noted the total number of brands was slightly less but that there were 888 brands registered of mixed fertilizers guaranteed to contain 14 or more total units of plant food. The failure to reduce the number of brands as was anticipated may be explained by the reports, showing that instead of discontinuing a large number of low grade brands of materials the formulas were so revised to increase the amounts of plant food contained as to meet the requirements.

The number of feeding stuffs' registrations has increased, 3522 being registered for 1926, as compared with 3124 for 1925. The number of brands of lime products registered for 1926 was 181, compared with 189 for 1925, and the fungicides and insecticides registered for the current year numbered 418, there being none registered for the previous year as an amendment to the Insecticide Law, requiring registration, became effective January 1, 1926.

The number of prosecutions required to be brought for the failure of these agricultural products, as a result of analyses of samples, remained low, showing conclusively that the general character of these materials was above standard and lawfully sold. Such actions as were necessary included only a small proportion of deficiencies, the larger number being made necessary as a result of neglect on the part of manufacturers to register their products, especially in the case of fertilizers and feeding stuffs.

## All Laws Vigorously Enforced

The general policy of the Bureau has been to vigorously enforce all laws to the fullest extent possible with the means at hand and to this end the agents in the field have been attentive to their duties. Much attention has been given to methods of labeling of products and the consideration of studies of types of different food products by the consulting chemists, looking toward overcoming misbranding and putting out materials below accepted standards in quality and food content. In this connection special attention was given to the preservatives used in beverages, such as chocolate milk drinks, and the position taken that the use of hydrogen peroxide was prohibited and unlawful and notice given to the trade accordingly.

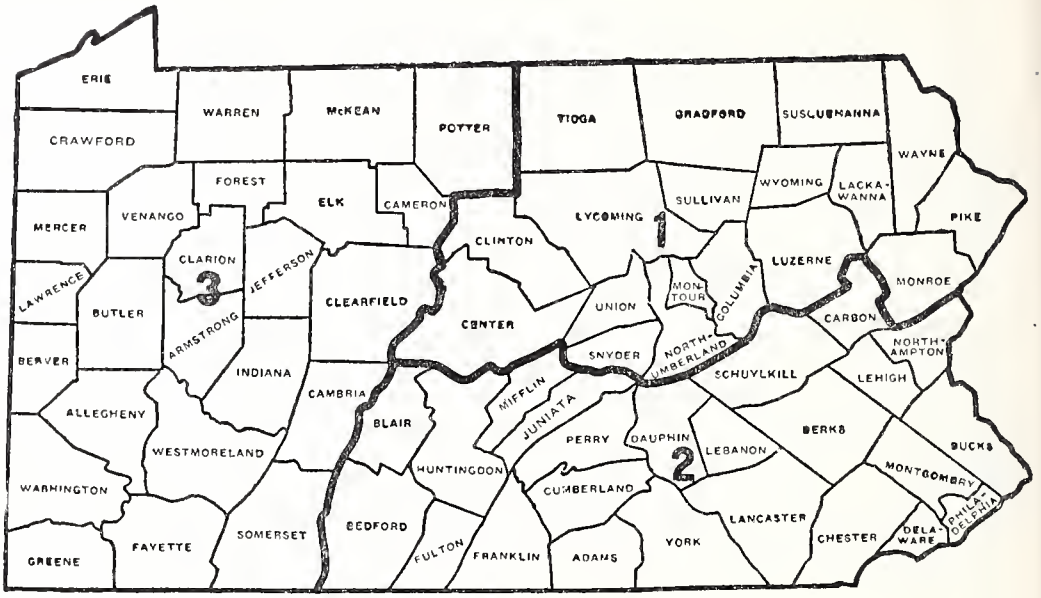


Fig. 10. The State is divided into three districts for the issuance of milk dealers' permits and the enforcement of law dealing with milk testers, weighers and samplers.

A study was also made of the character of product sold as viscolized milk, a process used to extend the cream line beyond the normal, giving milk treated by this process the appearance of containing at least twice as much cream as it actually did, and in order to warn the public against this practice it was declared a fraud and press bulletins sent to all interested parties.

Accompanying tables show the number of samples analyzed, cases terminated, receipts and expenditures for the calendar years 1907 to 1926 inclusive, with percentages of deficiencies in both foods and agricultural products, as examined by the Bureau.

TABLE 9a. Food Samples Analyzed and the Percentage of Samples for Which Prosecutions Were Ordered in Enforcing Pure Food Laws in Pennsylvania, Calendar Years 1909-1926

| | 1909 | 1910 | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Milk** | | | | | | | | | | | | | | | | | | | |
| Samples Analyzed | 3,116 | 1,893 | 3,990 | 3,621 | 3,291 | 2,361 | 5,670 | 3,217 | 5,573 | 4,488 | 4,099 | 2,754 | 3,177 | 3,102 | 2,859 | 2,595 | 3,782 | 2,546 | 62,134 |
| Prosecutions | 126 | 69 | 371 | 300 | 290 | 224 | 494 | 283 | 548 | 639 | 612 | 335 | 292 | 250 | 363 | 330 | 335 | 136 | 5,997 |
| Per Cent Violations | 4.0 | 3.6 | 9.3 | 8.3 | 8.8 | 9.5 | 8.7 | 8.8 | 9.8 | 14.2 | 14.9 | 12.2 | 9.2 | 8.1 | 12.7 | 12.7 | 8.9 | 5.3 | 9.7 |
| **Cream** | | | | | | | | | | | | | | | | | | | |
| Samples Analyzed | 1,078 | 526 | 1,189 | 890 | 684 | 390 | 1,156 | 707 | 1,300 | 821 | 779 | 496 | 698 | 600 | 584 | 579 | 679 | 520 | 13,676 |
| Prosecutions | ------- | 27 | 151 | 88 | 86 | 27 | 131 | 58 | 124 | 99 | 76 | 43 | 36 | 32 | 43 | 22 | 16 | 52 | 1,111 |
| Per Cent Violations | 0.0 | 5.1 | 12.7 | 9.9 | 12.6 | 6.9 | 11.3 | 8.2 | 9.5 | 12.1 | 9.8 | 8.7 | 5.2 | 5.3 | 7.4 | 3.8 | 2.4 | 10.0 | 8.1 |
| **Ice Cream** | | | | | | | | | | | | | | | | | | | |
| Samples Analyzed | 266 | 351 | 238 | 385 | 366 | 358 | 366 | 162 | 332 | 395 | 230 | 244 | 376 | 339 | 164 | 175 | 185 | 168 | 5,100 |
| Prosecutions | 39 | 63 | 30 | 48 | 49 | 87 | 41 | 12 | 17 | 40 | 25 | 19 | 3 | 27 | 6 | 3 | 11 | 37 | 557 |
| Per Cent Violations | 14.7 | 17.9 | 12.6 | 12.5 | 13.4 | 24.3 | 11.2 | 7.4 | 5.1 | 10.1 | 10.9 | 7.8 | 0.8 | 8.0 | 3.7 | 1.7 | 6.0 | 22.0 | 10.9 |
| **Butter** | | | | | | | | | | | | | | | | | | | |
| Samples Analyzed | 974 | 951 | 261 | 532 | 429 | 150 | 265 | 338 | 132 | 509 | 208 | 304 | 330 | 190 | 167 | 121 | 179 | 160 | 6,200 |
| Prosecutions | 0 | 13 | 1 | 4 | 9 | 3 | 1 | 6 | 4 | 40 | 11 | 8 | 11 | 51 | 29 | 11 | 35 | 36 | 273 |
| Per Cent Violations | 0.0 | 1.4 | 0.4 | 0.8 | 2.1 | 2.0 | 0.4 | 1.8 | 3.0 | 7.9 | 5.3 | 2.6 | 3.3 | 26.8 | 17.4 | 9.0 | 19.6 | 22.5 | 4.4 |
| **Oleomargarine** | | | | | | | | | | | | | | | | | | | |
| Samples Analyzed | 699 | 515 | 176 | 171 | 102 | 71 | 81 | 125 | 77 | 81 | 9 | 10 | 11 | 4 | 6 | 4 | 4 | 79 | 2,225 |
| Prosecutions | 273 | 232 | 63 | 58 | 34 | 24 | 16 | 97 | 20 | 25 | 4 | 10 | 9 | 3 | 6 | 3 | 3 | 8 | 888 |
| Per Cent Violations[1] | 29.1 | 45.0 | 35.8 | 33.9 | 33.3 | 33.8 | 19.8 | 77.6 | 25.9 | 30.9 | 44.4 | 100.0 | 81.8 | 75.0 | 100.0 | 75.0 | 75.0 | 10.1 | 39.9 |
| **All Food Products** | | | | | | | | | | | | | | | | | | | |
| Samples Analyzed | 6,200 | 5,594 | 8,200 | 7,204 | 6,846 | 4,827 | 8,939 | 5,807 | 8,701 | 6,643 | 6,851 | 7,722 | 7,422 | 6,543 | 6,693 | 6,466 | 8,867 | 7,648 | 127,173 |
| Prosecutions | 797 | 667 | 1,029 | 1,049 | 1,025 | 1,010 | 1,165 | 1,093 | 1,169 | 1,133 | 1,007 | 1,033 | 1,031 | 1,014 | 1,195 | 1,262 | 1,358 | 1,163 | 19,200 |
| Per Cent Violations[2] | 12.9 | 11.9 | 12.5 | 14.6 | 15.0 | 20.9 | 13.0 | 18.8 | 13.4 | 17.1 | 14.7 | 13.4 | 13.9 | 15.5 | 17.9 | 19.5 | 15.3 | 15.2 | 15.1 |

[1]Violations, technical, selling without licenses, etc., 1920-1925 inclusive. Violations for preceding years probably largely of the same character. All Violations with the exception of Oleomargarine were essentially adulteration and deficiency.

[2]The samples which actually constitute violations of the pure food regulations are an extremely small percentage of all the foods offered for sale in Pennsylvania. Because of the fact that only samples of doubtful character are taken by the food agents and these selected with great care the number of violations is surprisingly low and is evidence of the general observance of the pure food regulations.

TABLE 10. Analyses, Etc., of Fertilizers, Feeding Stuffs, Lime Products, Paints, Oils, Turpentine, Etc., Department of Agriculture Pennsylvania, Calendar Years 1916-1926

| | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fertilizers.** | | | | | | | | | | | |
| Samples analyzed | 683 | 1,717 | 1,743 | 1,932 | 1,637 | 1,913 | 1,968 | [1]1,247 | 1,869 | 2,324 | *-------- |
| Brands represented | -------- | [2]736 | 640 | 625 | 676 | 627 | 751 | 485 | 746 | 836 | *-------- |
| Brands registered | 1,408 | 1,670 | 1,115 | 1,651 | 1,692 | 1,771 | 1,588 | 1,708 | 1,381 | 1,199 | 1,393 |
| Samples deficient | 61 | 283 | 438 | 492 | 423 | 203 | 287 | 249 | 304 | 318 | *-------- |
| Proportion deficient (%) | 8.9 | 16.5 | 25.1 | 25.4 | 25.8 | 10.6 | 14.6 | 20.0 | 16.3 | 13.7 | *-------- |
| Registration fees | $24,355 | $30,130 | $25,320 | $33,560 | $34,050 | $35,145 | $30,604 | $35,310 | $28,665 | $23,995 | $29,220 |
| Fines received[3] ($25 each) | $ 1,875 | $ 1,200 | $ 475 | $1,476 | $1,800 | $1,250 | $ 600 | $ 400 | $ 950 | $ 3,075 | $ 1,875 |
| **Feeding Stuffs.** | | | | | | | | | | | |
| Samples analyzed | †1,411 | 1,368 | 1,312 | 1,365 | 1,378 | 1,954 | 1,714 | 2,057 | 1,600 | 1,646 | *-------- |
| Brands represented | ‡ 629 | 655 | 601 | 652 | 662 | 862 | 777 | 1,136 | 771 | 637 | *-------- |
| Brands registered | 2,318 | 2,267 | 2,435 | 2,401 | 2,712 | 3,502 | 2,248 | 3,569 | 3,115 | 3,105 | 3,474 |
| Samples deficient | ‡ 191 | 124 | 133 | 125 | 145 | 166 | 99 | 168 | 67 | 60 | *-------- |
| Proportion deficient (%) | ‡ 17.4 | 11.0 | 12.9 | 12.8 | 14.3 | 12.1 | 8.2 | 12.3 | 6.3 | 6.5 | *-------- |
| Registration fees | $-------- | -------- | -------- | -------- | -------- | 20,025 | 56,260 | 63,423 | 53,403 | 55,074 | 63,290 |
| Fines received[3] ($50 each) | $ 900 | 1,750 | 1,750 | 1,850 | 3,300 | 1,100 | 900 | 2,900 | 3,350 | 4,150 | 5,975 |
| **Lime Products.** | | | | | | | | | | | |
| Samples analyzed | † 204 | 146 | 149 | 242 | 140 | 186 | 183 | 161 | 123 | 187 | 181 |
| Brands represented | ‡ 77 | 50 | 45 | 66 | 40 | 59 | 45 | 19 | 42 | 60 | *-------- |
| Brands registered | 28 | 181 | 170 | 187 | 171 | 177 | 179 | 180 | 205 | 190 | 164 |
| Samples deficient | ‡ 64 | 80 | 68 | 59 | 35 | 52 | 50 | 53 | 36 | 55 | *-------- |
| Proportion deficient (%) | ‡ 39.3 | 62.0 | 49.3 | 31.5 | 41.7 | 44.1 | 48.1 | 48.2 | 48.6 | 40.4 | *-------- |
| Registration fees | $1,125 | 1,380 | 1,230 | 1,385 | 1,330 | 1,255 | 1,270 | 1,225 | 1,410 | 1,315 | 1,200 |
| Fines received[3] ($10 each) | $-------- | 30 | 40 | 170 | 80 | 50 | 70 | 40 | 120 | 120 | 110 |
| **Paints, Oils, Turpentine and Putty.** | | | | | | | | | | | |
| Samples analyzed | † 167 | 255 | 55 | 102 | 179 | 49 | 164 | 183 | 50 | 175 | 205 |
| Samples adulterated | ‡ 13 | 11 | 9 | 8 | 4 | 2 | 12 | 3 | 1 | 21 | 0 |
| Proportion adulterated | ‡ 7.8 | 4.4 | 17.3 | 7.9 | 2.2 | 4.5 | 7.6 | 1.7 | 2.1 | 12.1 | 0.0 |
| Fines received | $ 100 | 175 | 275 | 125 | 50 | 150 | 275 | 50 | 25 | 150 | 275 |
| Number of prosecutions | 2 | 5 | 9 | 4 | 1 | 5 | 11 | 2 | 1 | 5 | 16 |

†Official and Special samples. ‡Official samples. *Figures not available at time of reporting. [1]Fertilizer field inspection work curtailed and number of samples decreased by reduced appropriation. [2]Brands represented by Spring inspection in the years prior to 1924. Fall inspection in these years was largely duplicate brands. Spring and Fall brands combined beginning with 1924. [3]Fines included non-registration and deficiency cases.

# Bureau of Markets

The most significant fact regarding the work of the Bureau of Markets during 1926 has been the large increase of interest in marketing and the great demand for the various services which are carried on by the Bureau in the different parts of the state.

There has been a very rapid expansion in several projects, especially those services dealing with standardization. In both the fruit and vegetable and poultry marketing work, the inspection service rendered during the year has been from three to four times as large as in 1925. This growth has been entirely voluntary, as cooperating producers and shippers request such inspection because they are convinced of its value to them. As they also pay fees approximately covering the field expense, the service which the Bureau renders must be of real value.

In discussing farm marketing problems, it must be emphasized that present marketing methods are the result of years of development; improvements cannot be achieved by revolutionary changes. Progress will be made chiefly by the location and elimination of defects, and by the continued development of home markets for Pennsylvania farm products. The present work of the Bureau is the result of gradual development since 1919. The activities, as explained in detail in the following pages, are lines of work which a public agency can do to serve best in the marketing of farm products.

The Bureau lends a helping hand in farm marketing through its market reports which have a daily distribution through the press of over 2,750,000; through its shipping point inspections which totaled 1,500 cars of peaches, apples and potatoes in 1926; through its successful efforts to re-establish the home market for Pennsylvania-grown wheat, which has already brought results as indicated by the selling price of Pennsylvania wheat which is now on a par with the best hard winter wheat of the west; through its assistance to cooperative organizations which have grown in strength, membership and financial standing; and through poultry and egg marketing work started since 1923.

## Market Reporting

The outstanding development in the market reporting work of the Bureau during the year has been the cooperation of the Associated Press and United Press in the distribution of market reports from both Philadelphia and Pittsburgh over their own leased wires. In this way, rapid distribution has been secured so that most of the newspapers in the state now carry up-to-date information on the markets for farm products.

The preparation and distribution of market reports is intended to inform producers, distributors and consumers as to the conditions which are prevailing in the larger markets for the various farm

products. They include not only prices but other valuable information such as amount of shipments and receipts, trend of the market, conditions in other markets and producing areas affecting Pennsylvania.

From the beginning, the newspapers have been used as the chief method of distribution of this market information in order to secure prompt and wide circulation. In 1924, the preparation of material for state-wide distribution was transferred from Harrisburg to Philadelphia and an experienced newspaper man placed in charge. The results secured since that time have amply justified the change.

Radio Market Reporting. The first broadcasting of radio market reports in the country was started from station KDKA at Pittsburgh in 1920, the information being furnished from the joint State and Federal office in that city. During the past two years, there has been a steady expansion of radio broadcasting until reports are being distributed several times each day through stations in Pittsburgh, Philadelphia, and a number of other cities.

A special service developed in the latter part of 1924 at Philadelphia entitled, "Marketing Hints for Housewives," which is intended to inform housewives of market conditions and to give them information which would be of value to them in the economical purchase and use of foodstuffs, especially perishables, has been expanded and continued during 1926 from station WIP. A similar service has also been established at Pittsburgh.

Special Reports. In a number of cases, special reports are carried on with limited groups. During the peach harvest a brief summary of shipments, market conditions and prices, was phoned from the Philadelphia office to Chambersburg each day. This information was distributed to growers through the press or by telephone so that they were informed of the condition of all principal eastern markets by 2:00 P. M. each day including information on prices, supplies and demand. A similar report was prepared and distributed in the grape producing area of Pennsylvania and New York from the Buffalo office of the New York Department of Farms and Markets, both the Federal and Pennsylvania Bureaus cooperating in this service.

In cooperation with the Pennsylvania Millers' State Association, the Bureau has prepared a weekly market report on soft winter wheat and flour. This also contains a review of the feed and hay market and items of interest regarding grain and grain products in other countries. Results indicate that this report is of value to millers in marketing flour made from Pennsylvania wheat.

Livestock Market Reporting. On July 1 the Federal Bureau of Agricultural Economics began reporting the livestock market at Pittsburgh, although the funds available did not permit the establishment of the usual complete service at that market. Through the financial cooperation of the State Bureau, the leased wire service of the Federal Department was extended to this livestock market. The new service has been well received and has simplified the handling of market information for broadcasting from station KDKA at Pittsburgh.

Although the Lancaster branch office of the Bureau has been operated since 1920, it became a joint Federal-State office for the first time on July 1, last.

For several years the market reporter at Wilkes-Barre has acted as an inspector of the Federal Department in the case of shipments of fruits and vegetables to Scranton, Wilkes-Barre and surrounding points. The volume of such inspections has increased steadily so that it became necessary to place an assistant at that office during the spring of 1926. While this arrangement was intended as a temporary one, it has subsequently been made permanent, as the number of carloads inspected increased from 167 in 1925 to 282 in 1926. In each case the inspection was requested by one of the interested parties as the basis for settlement of a dispute over the grade or condition of a product. Through this service a much fairer settlement of such disputes is made possible with resultant benefit to all concerned. A similar arrangement is in effect at Harrisburg where the inspections increased from 22 in 1925 to 40 in 1926.

The very satisfactory relations with the United States Department in market reporting work have continued during the year. At the present time, every branch office of the Bureau is operated as a joint Federal-State office thereby securing a maximum of efficiency without duplication or unnecessary expense.

## Fruit and Vegetable Marketing

The production of most fruits and vegetables in the United States was abnormally large during 1926 so that the industry has been confronted with a succession of serious marketing problems. To a considerable degree this was true in Pennsylvania, especially in the case of peaches, apples and grapes, there being abundant crops of each of these commodities.

**Shipping Point Inspection.** Because of market conditions, shippers of apples and peaches early manifested an interest in shipping point inspection of these commodities. This service, which was begun in 1923, had grown to some degree during subsequent years until a total of 331 cars were inspected in 1925. At the end of 1926, however, total inspections amounted to 1497 cars or nearly five times the number of the previous year. Detailed figures indicating the very rapid growth of this work are given in table 11.

TABLE 11. Cars of Apples, Peaches and Potatoes Officially Inspected (1) Before Shipment at Pennsylvania Points, Calendar Years 1923-1926

| Years | Inspection Points | Number of Cars Inspected | | | | Per cent Grading U. S. No. 1 or Fancy | | |
|---|---|---|---|---|---|---|---|---|
| | | Total | Apples | Peaches | Potatoes | Apples | Peaches | Potatoes |
| 1923 | 8 | 238 | 234 | ---------- | 4 | 71% | ---------- | 60% |
| 1924 | 10 | 196 | 169 | 72 | 15 | 64% | 84% | 52% |
| 1925 | 12 | 331 | 304 | ---------- | 27 | 79% | ---------- | 62% |
| 1926 | 55 | 1497 | 1002 | 435 | 62 | 76% | 75% | 34% |

(1) Federal-State Cooperative Shipping Point Inspection.

This work is done by inspectors appointed by the Bureau who are licensed by the Federal Department of Agriculture so that certificates issued by them will be acceptable not only in the courts of Pennsylvania but in all Federal courts in other sections of the country. The Federal Department maintains supervision over the field work and certificates issued by these inspectors, the State Bureau assuming the responsibility for finances, personnel, and all other operating details. One man acts as the Federal and State supervisor, no duplication or confusion resulting from this arrangement.

Shipping point inspection, as the name indicates, is the inspection of samples of fruits and vegetables at the time of shipping, according to definite established standard grades. Certificates are issued

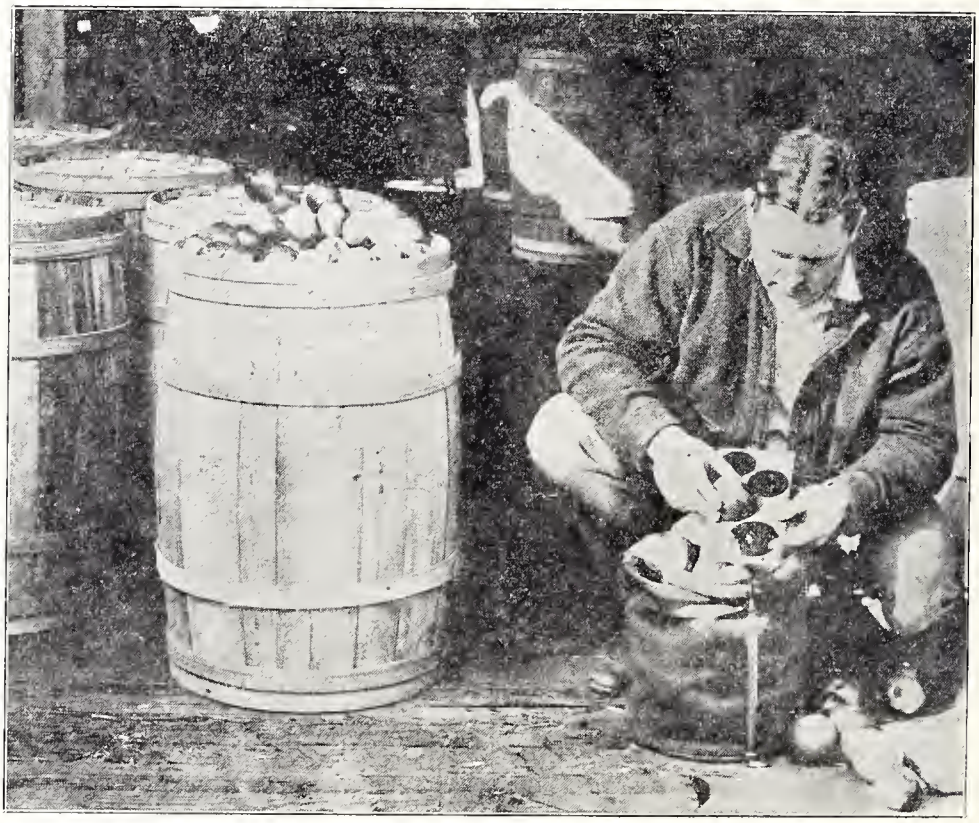

Fig. 11. Inspecting barrelled apples at shipping point.

on each carload or storage lot based on such inspection, and indicating the actual grade of the product, consideration being given for color, size, condition, freedom from disease or insect injury and other factors.

The standard grades, which are used in this work, are the grades of the U. S. Department of Agriculture, and have also been adopted by this Bureau under authority of law as the standard grades for Pennsylvania. During 1926, revisions of both the apple and potato grades previously established, were made based upon the experience

of previous years in actual inspection work on these commodities. These include the new U. S. Commercial grade. New standard grades for Pennsylvania certified seed potatoes were also established during the year.

The inspection work is largely self-sustaining through the payment of a fee for each carload or storage lot by the applicant for such inspection. The fees from these inspections are placed in the Bureau of Markets special fund for use in the payment of the expenses of this work. In this way, the service can be expanded or contracted in accordance with the actual demand of shippers and their willingness to pay the cost of such inspection. In no other way could the demand for the work in 1926 have been met by the Bureau.

Owing to the critical marketing conditions during 1926, the service of the Bureau in this connection was extended to the limit of financial possibilities in order to serve as many shippers as possible. During the year, potato inspection work was carried on in both Potter and Lehigh counties. The service in Potter County was well supported, but there was a decided lack of interest shown in Lehigh County largely because of the very poor quality of the crop. Just at the close of the year, however, interest in the inspection work increased in Lehigh County and it is expected that it will be used to a considerable degree during the early part of 1927. This particular work has been continued in recognition of the effect which potatoes in Lehigh County have on the general price level of Pennsylvania potatoes in Philadelphia and other markets of the eastern part of the state. It has been hoped to improve the quality of Lehigh County stock to such a degree that it would equal the stock with which it comes in competition.

The inspection certificates of over 1000 cars of apples represent the largest sample of Pennsylvania apples from which actual records of grade have ever been available, as the quantity of fruit included amounts to over half a million bushels. As has been stated previously, 76 per cent of this fruit graded U. S. No. 1 or U. S. Fancy. Of the 207 cars which did not meet these grades, the factors which prevented the fruit from being included in the higher grades were as follows:

| | Number of Cars | Per cent |
|---|---|---|
| Lack of color | 187 | 19% |
| Worm injury | 91 | 9 |
| Scars | 57 | 6 |
| Mechanical Injury | 39 | 4 |
| Hail Injury | 22 | 2 |
| Russeting | 14 | 1 |
| Sooty Blotch | 10 | 1 |
| All other defects | 20 | 2 |

The above figures clearly indicate that the absence of good color was the most important single reason for Pennsylvania apples failing to meet the U. S. No. 1 grade. There are a number of ways in which fruit growers can remedy this condition and so increase the market value of their fruit. The next defects in order of im-

portance, worm injury, scars and mechanical injury, are of sufficient size so that more attention should be paid to remedying them as far as possible. In this respect, 1926 was an unusual year as scab was very uncommon and is not included in the list of defects affecting the grade of the fruit. In previous years, this has been one of the most important factors affecting grade.

As in the case of apples, the 435 cars of peaches which were inspected in 1926 represent the largest quantity of this fruit from which grade records have ever been available in Pennsylvania, over half of the carload shipments of the entire state having been inspected. According to the certificates, 75 per cent of the fruit graded U. S. No. 1 or better, there being 135 cars which failed to meet the requirements of this grade. The defects mentioned on the certificates of these 135 cars were as follows:

| | Number of Cars | Per cent |
|---|---|---|
| Softness | 124 | 29% |
| Worm injury | 41 | 9 |
| Scab | 35 | 8 |
| Mechanical injury | 30 | 7 |
| Misshapen | 10 | 2 |
| Split Pits | 10 | 2 |
| All other defects | 18 | 4 |

The chief contributing factor, softness, was largely due to the continued rains during the harvesting season which caused the peaches to soften prematurely, and retarded picking operations. The importance of this single point in the marketing of the crop is indicated by the fact that almost one-third of the peaches inspected were kept out of grade by this single factor. The other more important defects mentioned are susceptible to control through more care in orchard and packing house operations.

The figures in the preceding table would seem to indicate that the quality of Pennsylvania potatoes which have been inspected and complied with U. S. Grade No. 1 has steadily decreased over a period of years. It must be remembered, however, that up to the present time the number of cars inspected has been relatively small although it has increased steadily. During 1926 inspection has been extended to additional areas for the first time and most of the cars which did not meet grade have been from that section.

**Sources of Receipts Studied.** For the past five years, records of railroad receipts of fruits and vegetables at 15 of the larger markets of the state have been compiled, in order to have the facts indicating the quantity of competitive produce which is entering the state and which might be grown in Pennsylvania. During 1926, bulletin No. 429 entitled, "Pennsylvania as a Market for Potatoes," was published by the Bureau analyzing these figures for potatoes.

Many striking points were brought out in this study. Less than 12 per cent of the entire production of the state is usually shipped to market by rail, practically all of the balance except that portion used for seed being sold in local markets. About 5,000 cars of com-

petitive late potatoes are being sold each year in the 15 cities from which records are available. Most or all of these potatoes might be supplied to the consumers of the state by Pennsylvania growers. Good quality, well graded potatoes from Pennsylvania sell for prices equal to or exceeding those of competitive stock from other states but Pennsylvania potatoes of only fair quality and grade usually bring prices below competitive receipts. In the Philadelphia market over a period of five years, Pennsylvania potatoes consistently brought both the highest and the lowest prices in the market largely because of variation in quality and grade.

**Advertising Apples.** For several years the Bureau has acted as the distributing agency for the State Horticultural Association in the preparation and distribution of advertising material to Pennsylvania growers. With the knowledge of the expected large fruit crop, a special effort was made to develop this project to assist in marketing the fruit crops of the state. Two advertisements were placed in national trade papers featuring Pennsylvania peaches and about 1100 colored posters were distributed to growers at cost.

The apple advertising work continued to expand so that approximately 20,000 recipe booklets, 2,200 colored posters, and 8,000 price cards were distributed to growers in different sections of the state. Results of this work have been very effective as indicated by the rapid expansion and the reports of those growers who have cooperated in the use of this material. The finances of this work are entirely carried by the State Horticultural Association.

While the Pennsylvania growers have been making very satisfactory progress as indicated above, fruit growers in other sections of the country have become convinced of the importance of a national apple advertising campaign in stimulating the demand for this fruit in an effort to make the industry more profitable to the large majority of growers. This project resulted in the organization of a cooperative advertising organization called "Apples for Health, Inc." which is undertaking to begin its activities in 1927 providing sufficient financial support is secured. The State Horticultural Association is cooperating in this work and The Bureau is rendering assistance.

## Poultry Marketing Activities

The poultry business in Pennsylvania is frequently described as "a 50 million dollar industry." Because of the importance of the poultry on the farms of the state, the Bureau has undertaken several poultry and egg marketing projects.

**Accredited Hatchery Work.** The most important poultry development has been the adoption of an accredited hatchery plan. Experimental work in 1924 led to the adoption of final regulations governing the work in the summer of 1925. The satisfactory results of the work are indicated by the growth and the return of the first cooperators. The further development of the accredited work will

do much to standardize the quality of baby chicks and eggs produced as well as reduce losses from bacillary white diarrhoea which is a transmissible disease. A total of 48,717 birds were inspected in 1926 as compared to 21,100 in 1925, and the number of birds tested increased from 13,000 in 1925 to 28,354 in 1926.

Flocks are classed as "certified" when all breeding birds have been inspected for health, vigor, type and production by a representative of the Bureau. When the owner desires, blood samples are taken of all birds in the flock and tested for bacillary white diarrhoea by the Bureau of Animal Industry at the laboratory in Philadelphia. Further infection is prevented by compelling flock owners to sell all reactors immediately for slaughter. The flock is classed as "accredited" after two consecutive annual clean tests have been passed. Hatcheries are similarly classified depending on the grade of eggs used to produce day-old chicks for sale. All flocks and hatcheries meeting the requirements of any classification are issued certificates for identification.

Although some poultry men and chick buyers attribute all chick losses to white diarrhoea because a test has been made, there have been many indications that the test had increased hatchability and livibility. Table 11a given in this report indicates an increase in percentage of reaction which is due primarily to the testing of a large number of farm flocks where conditions are not always as favorable as in commercial flocks. Hatcheries have stated that the blood test has reduced the number of replacements of chicks and it is likely that the testing of the large number of farm flocks supplying hatcheries will greatly assist in changing from quantity to quality production.

The standardization of the quality of day-old chicks for sale and the supervision of hatcheries is expected to reduce misrepresentation and misunderstanding heretofore experienced. This work will tend to make birds more uniform in character and in turn will result in a more uniform type of egg available for distribution with an increased return to the producer.

TABLE 11a. Certification and Accreditation of Poultry Flocks and Hatcheries in Pennsylvania, 1924-1926

| | 1924 | 1925 | 1926 |
|---|---|---|---|
| Certified flocks no test | 2 | 7 | 21 |
| Certified flocks one test | 1 | 11 | 60 |
| Certified flocks two tests | 0 | 1 | 3 |
| Accredited flocks | 0 | 1 | 3 |
| Certified hatcheries no test | 1 | 4 | 4 |
| Certified hatcheries one test | 1 | 8 | 11 |
| Certified hatcheries two tests | 0 | 1 | 7 |
| Accredited Hatcheries | 0 | 0 | 0 |
| Varieties inspected | 2 | 6 | 8 |
| Birds inspected | 3,100 | 21,100 | 48,717 |
| Birds certified | 2,480 | 17,500 | 37,394 |
| Per cent culling | 20% | 17% | 23% |
| Birds tested | 990 | 13,000 | 28 354 |
| Per cent reactors | 5.7% | 4.6% | 7.9% |
| Initial inspections | 4 | 29 | 110 |
| Subsequent inspections | 14% | 55% | 30% |
| Total inspections | 18 | 84 | 140 |

The decrease in per cent reactors in 1925 as compared to 1924 is primarily due to the Department supervision and the addition of large commercial flocks where practices are more modern. The increase in 1926 is due wholly to the addition of a large number of farm flocks where constant contamination has caused serious bacteria infection. Many of the new flocks had over 25 per cent infection and one had as high as 50 per cent. The increase in per cent of culling is due to the addition of a large number of farm flocks in which standard bred and production qualities were lacking. The increase in number of inspections is due to the addition of many more flocks and hatcheries and also because of the further advance in the work at the close of the year.

**Poultry Marketing Work Grows.** The growth of the accredited hatchery work and the demand for services on many of the existing poultry problems has made it necessary to assign a new man to the Bureau to assist in the poultry and egg marketing work. New work will consist of the standardization of egg grading, making further investigations to determine the causes of egg breakage in transit and studies dealing with present methods of marketing eggs and poultry. In the standardization work, producers and distributors will be instructed in the grading of eggs using the U. S. standard grades and classifications as a basis. Buyers will also receive instruction to recognize U. S. grades. Causes of egg breakage will be determined by investigations at farms, shipping points and terminals. Facts regarding present methods of marketing will be obtained by making investigations with farmers, commercial poultrymen and dealers. In all of the marketing work an effort will be made to enlist the cooperation of all interested agencies.

## Better Wheat for Home Markets

Through the efforts for better wheat production and an adequate home market, the number of varieties of wheat have been reduced to a few of the better milling varieties. Moth infestation has been reduced practically 40 per cent and the quality of wheat has been raised to a new high standard. There has been a greater demand for Pennsylvania wheat from not only Pennsylvania mills but other mills as well, and large quantities of Pennsylvania wheat have been shipped south, causing greater competition and better prices to wheat growers in Pennsylvania.

Pennsylvania bakers have purchased larger quantities of Pennsylvania flour for not only bread but for pastry, pretzels, etc. For the first time, Pennsylvania flour was shipped to pretzel manufacturers as far west as Cincinnati, and some pastry flour was shipped to Chicago. Pennsylvania wheat was also reshipped from terminal elevators of Philadelphia and Baltimore back to Pennsylvania mills and some 50,000 bushels were shipped to Chicago. If this high standard can be maintained, the market for Pennsylvania wheat and Pennsylvania flour is assured.

Through the interest of Pennsylvania bakers and Pennsylvania millers, an exhibit of Pennsylvania flour and bakery products, which could be satisfactorily baked from this flour, were on display at the Sesqui-Centennial and received considerable attention.

During the year the records of the grade of wheat received at the Philadelphia and Baltimore markets has been continued as in previous years. These records show that in 1926 almost three times as many cars of wheat were received from Pennsylvania points as in 1925. As already stated, some of the wheat shipped to the Balti-

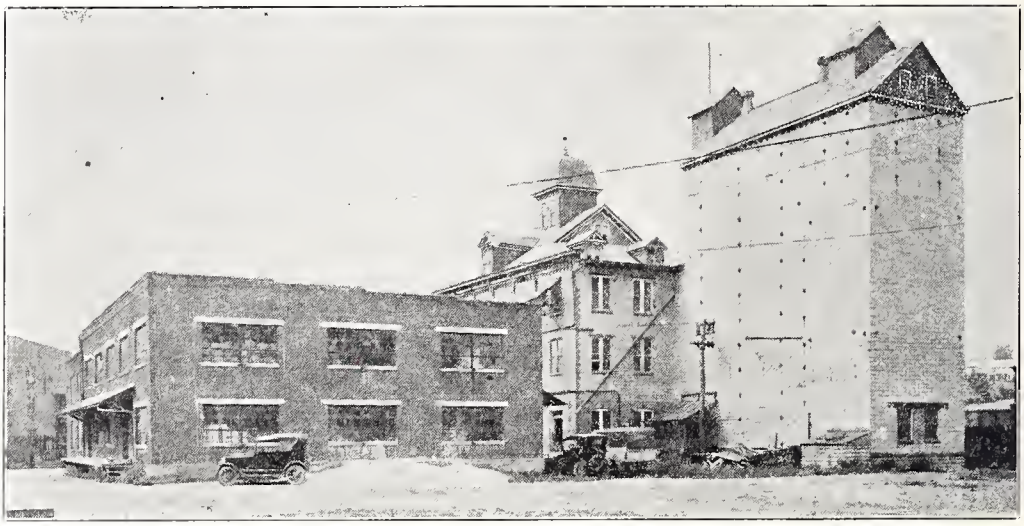

Fig. 12. Large elevator equipped with dryer, Franklin County, Pennsylvania.

more market was reshipped back to Pennsylvania points so that the record of receipts at that terminal does not mean that all the wheat received there remained out of Pennsylvania markets.

Table 12 shows the number of carloads of wheat received at the Philadelphia and Baltimore terminals during the period from 1920 to 1926 and the per cent of these cars which were reduced in grade because of various grading factors.

TABLE 12. Grading Factors Causing Discount on Price of Pennsylvania Wheat at Terminal Markets, (1) Crop Years 1920-1926

| Year | Cars Shipped(2) | Percentage of Cars Reduced in Grade because of | | | | | |
|---|---|---|---|---|---|---|---|
| | | Angoumois Moth | Excess Moisture | Garlic | Cockle(3) | Weight per bushel | Smut |
| 1920 | 1,601 | 15.0% | 53.2% | 49.3% | 10.0% | 4.0% | ---------- |
| 1921 | 1,418 | 57.9 | 29.5 | 46.5 | 10.0 | 16.6 | ---------- |
| 1922 | 1,525 | 47.4 | 76.5 | 45.8 | 10.0 | 3.1 | ---------- |
| 1923 | 862 | 43.8 | 15.9 | 44.4 | 10.0 | 2.5 | 0.0 |
| 1924 | 488 | 21.1 | 55.5 | 45.0 | 10.0 | 10.5 | 10.0 |
| 1925 | 610 | 20.8 | 57.0 | 47.3 | 10.0 | 10.0 | 12.6 |
| 1926 | 1,705 | 20.4 | 48.7 | 60.3 | 4.0 | 12.9 | 7.4 |

(1) Philadelphia and Baltimore.
(2) Pennsylvania shipments to the two terminals.
(3) Estimated previous to 1926.

**Reasons For Wheat Discounts.** Garlic seems to be the factor causing the greatest discount to wheat growers and shippers of Pennsylvania in 1926. Out of 1705 cars shipped to Philadelphia and Baltimore in 1926, 1029 cars graded garlic and three-fourths of these cars graded medium and heavy garlic. Whenever there is an increase in garlic, there is also an increase in the discount especially so if a large volume grades "medium or heavy garlicky." This year the discount was as high as twelve cents while in 1925 when the percentage of garlicky wheat was 12 per cent less and a large pare "light garlicky," the discount was as low as three cents per bushel. Either the farmer is not aware of the large discounts due to garlic or he feels that it is much easier to accept the discount than to eradicate the garlic. However, every effort should be made to eradicate this weed as it affects the price received for both wheat and flour.

High moisture content is another factor causing big losses to Pennsylvania wheat growers. They not only suffer big discounts because of excessive moisture but the mere fact that so much of the wheat shipped falls into the lower grades because of this factor, gives it the appearance of inferior quality wheat and affects the price of all Pennsylvania wheat marketed. It is true that this factor is governed more or less by climatic conditions at time of harvesting. Nevertheless, much of our wheat could be marketed at a better grade if ventilators were installed in the farm bins. The high moisture content could be eliminated in a short time without danger of heating or infestation from the Angoumois grain moth. Better still, of course, would be a grain drier installed at a mill where the grain could be passed through the grain drier directly after threshing. This would take out the excess moisture, garlic, most of the smut, and protect against Angoumois grain moth. All wheat above the needs of the mill could be shipped to terminal market at a good grade.

The presence of moth in 20.4 per cent of the shipments shows that the farmers or shippers are practicing better moth control methods. The percentage of infestation was much less in the old infested area but new areas of infestation where farmers have not yet become accustomed to harvesting early and threshing early, kept the percentage equal to last year. More work must be done to prevent a spread of this pest during the year.

The wheat grading below a No. 2 because of low weight per bushel came from an area where new seed wheat has not been planted recently. It was also noticeable that this low weight wheat contained most of the cockle and foreign material. New seed is needed to raise the quality of wheat grown in some of the counties.

The percentage of smutty wheat was greatly reduced in the area that was infested last year but new areas developed this year which caused nearly 10 per cent of the wheat marketed to grade smutty. Much work was done last fall before planting to demonstrate methods to use in treating wheat to prevent smut by county agents and extension men from State College.

**Hay Grades.** Very little interest has been shown so far in hay grading. However, an exhibit and talk on the grades were given before the purchasing agents of the collieries at Wilkes-Barre last March. This section of the state purchases large quantities of hay and it was thought an inspection point might possibly be established at this point. About 60 tons of hay were inspected and graded at Girard, Pennsylvania, and this hay was marketed without difficulty.

## Cooperative Buying and Selling

Few people realize the extent of cooperative buying and selling among farmers in Pennsylvania. The membership in cooperative business organizations aggregates approximately 42,000, or one of every five farmers in the state if duplication in membership is not considered. In 1925, a business amounting to $30,913,000 was done cooperatively.

The cooperative movement has made real progress during recent years. While too much has frequently been expected from cooperative effort, the results as a whole have been satisfactory. The fact is apparent that such organizations must meet the competition of other buying and selling agencies and in the long run only those agencies of either group which can render the services most efficiently will survive.

In general, the achievements of farmers' cooperative organizations are the results of many small changes and innovations in distributive and business methods rather than of big revolutionary changes in practices. In the aggregate, however, these changes represent a big economic gain and savings to the producers of agricultural commodities. Different methods of bringing about these savings have been tried by various organizations and the best apparent means are emphasized in a bulletin entitled "Cooperative Buying and Selling Among Farmers" published during 1926.

No state has more cities of 5,000 or greater population, than Pennsylvania and none has, therefore, better local market outlets. Still it is frequently difficult to obtain high quality local farm products in many of our smaller market centers, and the consumer is frequently obliged to buy products grown in other states. Here is a great opportunity for local marketing organizations composed of growers near these markets. They can improve the quality of fruits, vegetables, dairy products, eggs, etc. sold on local markets, thereby bringing the farmer a better return. They can introduce standard grades, packs and packages and needed economies in local distribution. Local marketing associations can usually secure a more satisfactory market than growers acting individually can obtain, for such surpluses that the local markets cannot absorb at a fair price. Such organizations will relieve the grower of his market problems and permit him to concentrate on production.

**Institute of Cooperation.** The second session of the American Institute of Cooperation was held at the University of Minnesota during the summer months. This Institute, the first session of which

was held at the University of Pennsylvania, Philadelphia, in 1925 has made steady progress in the two years of its existence and promises to become one of the most effective factors in increasing the development of sound efficient cooperative organizations. The Bureau has assisted in the arrangement of programs for both Institutes.

## Market Investigations

A study of the Pennsylvania tobacco situation was made at the close of 1926 and is ready for publication. This study is principally a statistical summary of cigar leaf tobacco production, consumption and stocks on hand. The study revealed that the average annual production of Pennsylvania tobacco during the decade ending 1925 was 59,314,000 pounds and that the average annual consumption for that period was 56,213,000 pounds. Production during that period exceeded consumption by approximately three million pounds per year. The 1926 production in Pennsylvania, however, was estimated to be only 43,560,000 pounds which was 13,000,000 pounds less than the average annual consumption for the preceding decade.

Stocks of cigar leaf tobacco in the United States at the close of 1926 were nearly 50 per cent greater than at the close of 1917. Supplies of Pennsylvania tobacco, however, were only 35 per cent greater at the close of 1926 than at the end of 1917; Ohio tobacco stocks were about the same as a decade ago, but Wisconsin and Connecticut Valley tobacco supplies were nearly twice as large at the close of 1926 as at the end of 1917. With the exception of 1924, Pennsylvania cigar leaf stocks have never been as large during the last decade as were average stocks during the five year period of 1912 to 1916 inclusive. Average annual supplies of Pennsylvania tobacco in the hands of manufacturers and dealers from 1912 to 1916 amounted to 116,593,000 pounds.

**Direct Marketing Studied.** Early in July a study of the costs of direct marketing was begun and the field work has been completed. The purpose of this study is to determine facts on what percentage of the total sales is consumed by selling costs, such as; (1) Salesman's and helper's time, (2) Rental, (3) Hauling expense, and (4) Package expense, because of the importance of this type of selling in Pennsylvania. The data when tabulated and when averages are obtained will show which method of direct marketing is most expensive and which is least expensive as expressed in per cent of sales.

The various methods of direct selling which were included were (1) Peddling at retail, (2) Peddling at wholesale, (3) In retail market houses, (4) On retail curb markets, (5) On wholesale curb markets and (6) In farmers' markets. The facts in this study have been secured from daily sales reports from farmers who sell directly to the consumer or to the retailer. Approximately 50 producers selling by any of the above methods in six cities of the state cooperated in the project. Good average figures should be secured from these reports and they will be made public at an early date.

### Complaints Against Dealers

During each year, the Bureau usually receives a number of complaints against commission merchants or dealers in farm products for failure to make satisfactory settlement on shipments to them. Each of these complaints is carefully investigated and an effort has been made to secure a satisfactory adjustment in accordance with the facts. In most cases it has been possible to do this as such cases usually are the results of misunderstanding, carelessness, grading or lack of knowledge of market conditions.

During the past two years, a considerable number of complaints have been received regarding the activities of a very limited number of commission merchants handling poultry in the Philadelphia market. Every effort has been made to secure satisfactory settlement from these firms but without results. Because of the absence of sufficient authority in the Bureau of Markets law, it is suggested that during the 1927 Session of the Legislature, an amendment to this law be requested which would give the Bureau power to adequately investigate and act in such cases so as to secure proper settlement and to protect the interests of reliable dealers who are now forced to compete with such irresponsible firms.

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## Bureau of Plant Industry

The prevention, control and eradication of serious plant insects and diseases are the major responsibilities of this Bureau. In the production of agricultural crops, valued at $260,000,000 in 1926, insects and plant diseases play a very prominent part; in fact plant pests often become a limiting factor in the production of crops. It is estimated, for example, that the Angoumois grain moth has caused a loss to the wheat producers of the State totalling from $1,000,000 to $3,000,000 in one year. No agricultural crop is free from the potential and often actual menace of plant pests, and even though losses from this source may be avoided by the use of modern methods of crop protection, the actual money cost involved in the adoption of modern methods of pest control is frequently a substantial portion of the cost of agricultural production.

### Organization

The Bureau is organized into six sections according to the principal line of work, and field stations are maintained at North East, Meadville, Ebensburg, Chambersburg, Hazelton, Willow Grove, Norristown and Holmesburg where field studies and observations are made as well as being the field headquarters for certain lines of work.

The main lines of work carried out during 1926 are covered briefly in this report.

## Bee Disease Control Increases Honey Production

The apiary industry represents an investment of over a half million dollars and a revenue in 1925 of over $600,000. This is in addition to the value of bees in aiding the pollenation of fruit trees. It is conservately estimated that bees bring a net return of $1.00 per colony when placed in the orchard during the blooming period. When it is recognized that the production of honey in the state from the present apiaries could be greatly increased, even doubled, by the elimination of foulbrood disease and introduction of better beekeeping practices, the ecomoic value of bee inspection and educational work is apparent.

Inspection of 14,647 bee colonies in 1,400 apiaries of Butler, Franklin, Lackawanna, Lawrence, Luzerne, Mercer, Susquehanna, Venango, and Wyoming Counties during 1926 revealed that 996 colonies or almost seven per cent were diseased with sac-brood, American foulbrood or European foulbrood and ten per cent were housed so that treatment for disease was impossible.

It is illegal for persons to house bees in such a way that treatment for disease is impossible. This law, which became effective July 1, 1923, provides that it is unlawful for any person "to keep or maintain honey bees in any hive other than a modern movable frame hive which permits thorough examination of every comb to determine the presence of bee disease. All other types of hives or receptacles for bees are declared to be a public nuisance and a menace to the community."

Beekeepers in many parts of the state are voluntarily transferring their bees into the movable frame hives because they have found it profitable to do so. State inspection in the nine counties, however, showed that about one out of every ten colonies of bees is still illegally housed.

TABLE 13. Inspection of Apiaries in Pennsylvania, Calendar Years 1919-1926

| Year | Inspection | | | Per cent of colonies | | Queen Apiaries | |
|---|---|---|---|---|---|---|---|
| | Apiaries | Colonies | | | | | |
| | | Number | Average per Apiary | Diseased | In Unlawful Hives | Number Applying for Licenses | Number Licensed |
| 1919 | 291 | 8,231 | 28.0 | 6.4 | ---------- | 10 | 10 |
| 1920 | 852 | 9,714 | 11.4 | 10.8 | ---------- | 12 | 12 |
| 1921 | 1,782 | 18,176 | 10.2 | 10.1 | ---------- | 19 | 16 |
| 1922 | 890 | 9,394 | 10.7 | 7.8 | ---------- | 22 | 16 |
| 1923 | 371 | 4,475 | 12.1 | 9.0 | 16.0(1) | 21 | 12 |
| 1924 | 1,197 | 16,865 | 14.1 | 7.3 | 9.5 | 19 | 14 |
| 1925 | 998 | 9,572 | 24.1 | 5.7 | 5.7 | 21 | 11 |
| 1926 | 1,400 | 14,647 | 10.5 | 6.8 | 10.2 | 12 | 5 |

(1)The law requiring the use of movable frames in hives became effective July 1, 1923. The first year's inspection showed that 16 per cent of the colonies were kept in objectionable hives.

## Botany Section Enforces Seed Law

Enforcing the Pennsylvania Seed Law, which is designed to give farmers pure seed free from noxious weeds, is one of the important lines of activity carried out by this section. Nine serious noxious weeds are named in the State Seed Law, which, if present in quantity in grass seed offered for sale in the State, makes the sale of seed illegal.

The official inspection of seed supplies which includes the analyzing of official samples collected from the seedsmen has been greatly expanded during the past three years. More samples were collected from seedsmen during 1926 than any previous year, the number being 276 in 1926, 250 in 1925, and 239 in 1924. In making these collections, more than 100 wholesale and retail seedsmen were visited and in addition to collecting the samples the general stock in hand was examined to see if the containers were properly labelled. As a result of this inspection work, seedsmen have made noticeable improvement in their manner of handling the seed stock, especially with reference to proper labelling and stating of the analysis. Whenever the analysis reveals the presence of noxious weed seed, the dealer is immediately notified and the seed supply either recleaned or destroyed. Experience during the past few years indicates that dealers willingly cooperate with the state in eliminating the danger of farm seed being the carrier of noxious weed seeds, once it is established officially that such weed seeds are present in the seed which they are selling. While the quality of seeds handled by seedsmen is apparently improving in a very satisfactory manner, observations indicate that farm-grown seeds, those grown by farmers and sold to their neighbors for seeding purposes, are not of high quality. Frequently the germination is low and the amount of foreign matter quite high.

A marked improvement has been noticed during the last two years in the quality of seed offered for sale. In 1924, approximately 8 per cent of the samples analyzed contained a trace or a number of Canada thistle and dodder seeds; in 1925, only 3.5 per cent of the samples contained these noxious weeds; and in 1926, only 2.5 per cent. A report of seed analyses giving in addition other important information on the Seed Law, is issued each year.

A warning is issued from time to time to farmers throughout the state to buy their seed from reputable seed houses and not depend upon mail order houses outside the state, since the seed law is not effective in the latter case. In many cases, a seed supply of this kind proves to be the most expensive a farmer could possibly have purchased.

TABLE 14. Samples of Seed Analyzed in Pennsylvania, Calendar Years 1921-1926

| Year | Total Samples Analyzed | "A" Samples Collected from Seedsmen Official Analyses | "B" Samples Submitted By Individuals Private Analyses | "C" Samples for State Departments Special Analyses |
|---|---|---|---|---|
| 1921(1) | 141 | 5 | 124 | 12 |
| 1922 | 381 | 13 | 297 | 71 |
| 1923 | 434 | 123 | 262 | 49 |
| 1924 | 377 | 239 | 102 | 36 |
| 1925 | 587 | 250 | 239 | 98 |
| 1926 | 513 | 276 | 187 | 50 |

(1)The law requiring specific analysis and proper labeling of seeds went into effect July 1, 1921.

## Weed Identification and Control

In addition to the analytical work, this section maintains a weed and plant collection as an aid in both the seed and analysis work and in the identification and recommending of control measures of the many plants and weeds sent in by citizens of the state. During 1926, approximately 1,000 specimens of weeds and other plants were received for identification. At the present time the seed collection consists of some 1,350 species of seeds, and the plant collection some 1,750 species of Pennsylvania plants.

## Nursery Inspection

The inspection of nursery stock, established by the state in 1901, for the purpose of preventing the introduction and spread of serious fruit and forest insects and diseases, has proven a great protection for the horticultural industry of Pennsylvania. Without this service numerous insects and diseases, which are menacing orchards and forests in neighboring states and foreign countries, would likely be adding to the present troubles of fruit growers in this state.

**Brown-tail Moth.** The inspection of nursery stock imported under special permit from foreign countries is an important feature of the nursery inspection service. In addition to the usual number of common foreign pests found on imported stock during the past year one large nest of living brown-tail moth caterpillars was found and destroyed. This pest is common in Europe where is causes considerable damage and its dissemination in Pennsylvania would have meant an enormous loss to the fruit industry of the state. This pest has gained a foothold in the New England states where it has cost the states and the federal government approximately two and a half million dollars in their attempts for its control. The careful inspection of all imported stock brought into Pennsylvania and the supervision of shipments from other states, has kept this state free of such pests.

## Application of Inspection Service

The inspection of nursery stock, both domestic and imported, is a big job requiring highly trained men accustomed to intensive work. This can be realized best when it is known that there are 344 nur-

series in the state containing 4,876 acres of growing stock, all of which must be inspected once and much of it inspected as many as four times annually. Furthermore, there are sixty-two injurious insects and diseases likely to be distributed on nursery stock. In

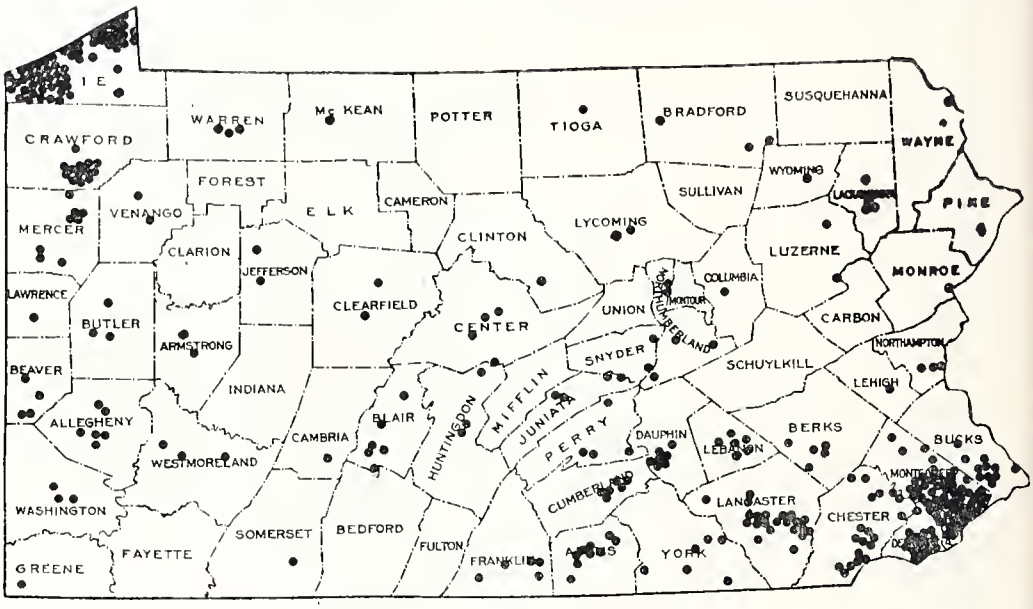


Fig. 13. Location of licensed nurseries in Pennsylvania.

1926, 842 separate inspections of nursery stock were made, in addition to the inspection of thirty shipments of imported nursery stock containing 614,602 plants.

Non-resident as well as resident nurserymen are required to have licenses, and in order to further protect the purchaser and eliminate fraud, all nursery stock dealers and agents must be licensed. In 1926, 300 non-resident nurseries, 119 nursery dealers and 4,347 agents were licensed to sell nursery stock in the state.

Legal action was taken during the year against two violators of the Horticultural Inspection Act and both were decided in favor of the Commonwealth.

TABLE 15. Nursery Licenses and Inspections in Pennsylvania, Calendar Years 1920-1926

| Year | Nurseries Licensed | | | Number of Inspections | Licenses to Sell Nursery Stock | | Interstate Shipments Inspected | Number of Imported Plants Inspected |
|---|---|---|---|---|---|---|---|---|
| | Resident | | Non-resident Number | | Dealers | Agents | | |
| | Number | Acreage | | | | | | |
| 1920 | 201 | 3,115 | 313 | 212 | 101 | 1,642 | 63 | ---------- |
| 1921 | 228 | 3,534 | 465 | 247 | 104 | 1,910 | 7 | ---------- |
| 1922 | 256 | 3,994 | 492 | 263 | 108 | 2,152 | 644 | ---------- |
| 1923 | 264 | 4,075 | 509 | 284 | 110 | 2,401 | 15 | 980,350 |
| 1924 | 314 | 4,326 | 446 | 615 | 89 | 2,740 | 6 | 897,370 |
| 1925 | 318 | 4,360 | 625 | 682 | 124 | 2,886 | 2 | 1,026,642 |
| 1926 | 344 | 4,876 | 300 | 842 | 119 | 4,347 | 10 | 614,602 |

## Japanese Beetle Quarantine and Control

The Japanese beetle (*Popillia japonica* Newm.), is an importation from Japan, first found in New Jersey in 1916 and in Pennsylvania in 1920. Since 1920 the insect has spread in Pennsylvania, so that it now covers a limited portion of the southeastern part of the state approximating 5325 square miles, comprising the counties of Northampton, Lehigh, Berks, Lebanon, Bucks, Montgomery, Philadelphia, Delaware, Chester, Lancaster, and the lower portion of Dauphin. The insect also occurs throughout the state of New Jersey, and to a limited extent in the states of Delaware, New York and Connecticut, the infested areas in these states being contiguous to New Jersey and the infested borders of Pennsylvania.

This insect is a destructive pest of orchards, fruits, and shade and ornamental trees, and to a limited extent to low-growing plants and weeds. Over 200 different species of plants are known to be attacked.

The Japanese beetle work is a joint project with the United States Department of Agriculture and the State Departments of Agriculture of New Jersey, Delaware and Pennsylvania; the field work is directed from the main Japanese beetle laboratory at Riverton, New Jersey, with additional sub-stations in each of the states concerned. Con-

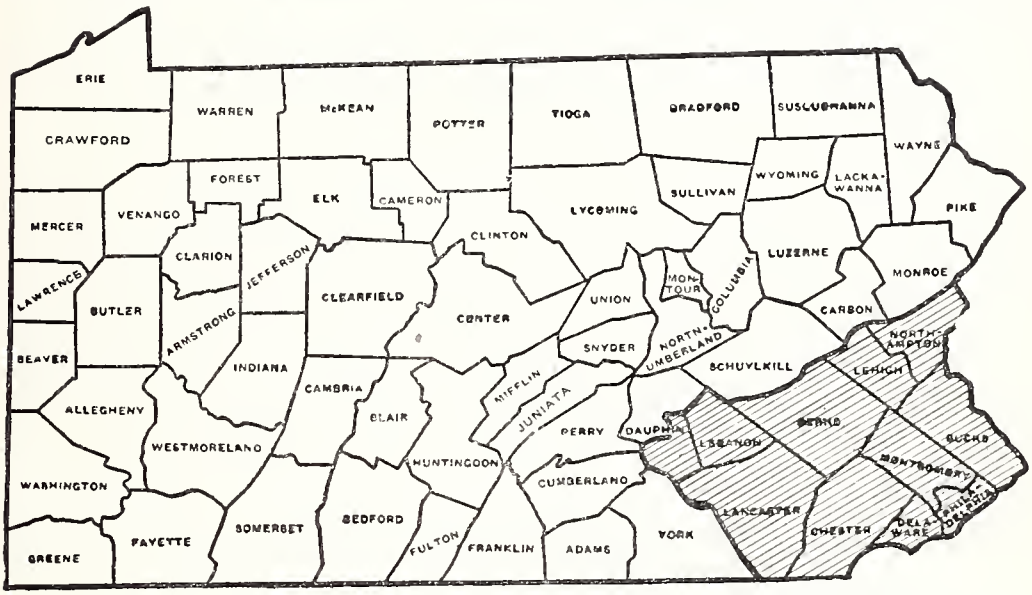


Fig. 14. Shaded portion is area infested with Japanese Beetle.

trol work is progressing along three lines: (1) The introduction of parasites that live upon the beetle in one or more periods of its life's history; (2) Field and laboratory experiments with insecticides, fumigants, repellents, etc.; (3) Preventing the artificial spread of the insect by the enforcement of quarantines on all farm crops, nursery stock, etc., moving from the infested area.

**Parasite Introduction.** It is believed that the ultimate control of the insect will be attained through the introduction and distribution of parasites or native enemies of the Japanese beetle. In

its native home (Japan) the Japanese beetle is controlled largely through the effectiveness of natural enemies. The work of introducing these natural enemies has been under way for several years, and at the present time of the rather large number of species which have been sent over and released, two species are known to be definitely established, namely, a tachinid, *Centeter cinerea*, and a species of tiphia, *Tiphia popilliavora*. Additional shipments have been received and released, but it is as yet too early to determine definitely to what extent other species have survived. It must be remembered that while it is believed that the ultimate control will be effected by parasites, that parasite distribution and establishment is a long-time proposition and is dependent very largely upon natural conditions. It must also be kept in mind that in dealing with parasites, the heavier infested areas will naturally be more subject to control from parasites than the lighter infested area, and that parasites must always be preceded by their host before they can become at all effective.

**Artificial Control Measures.** In the development of control measures, the use of arsenate of lead as a spray combined with ordinary flour is still recommended as the best protection against beetle attack. A single application, if put on in time and thoroughly well, usually reduces the damage to a point where it is of slight consequence. Improved sprays have been developed, but are not as yet available in a commercial way. General Bulletins Numbers 390, 406 and 410 have been published by the Department dealing with the life history, habits and control of the insect.

An attractant material has been developed which can be used in connection with a contact spray in killing large numbers of beetles. This attractant, which is known as "Geraniol," is used to concentrate large numbers of beetles in given places, and is then followed by an application of the contact spray, thus destroying exceedingly large numbers of the beetles. This procedure is especially useful in dealing with ripened fruits, such as early apples and peaches, under conditions which make the use of a poison such as arsenate of lead undesirable.

**Quarantine Enforcement.** Quarantine enforcement involved the following three general lines of work; scouting for new infestations, supervision of the movement of farm products from the quarantined area, and supervision of the movement of nursery and farm plant products to points outside the quarantine. The scouting work covers an area varying from 15 to 100 miles from the known infested area of the previous year, with additional scouting in markets of our larger towns, and other points where there is any reason to expect possible infestation. During the 1926 season, the insect was found locally in a number of towns in southeastern Pennsylvania beyond the 1925 line, in the territory indicated in a preceding paragraph telling the present area of infestation. In spite of the apparent extension of the area during the 1926 season, the outermost point is still approximately 100 miles from the original source of infestation in 1920, giving an average yearly spread of approximately 15 miles in an airline distance. The farm products quarantine has

been carried on substantially the same as during the previous year, 1925, with especial attention being given to carriers of produce such as trucks.

Experience has shown that the amount of quarantined articles carried by the general public in pleasure cars is insufficient now to warrant the heavy expenditure of funds involved in the actual stopping and inspection of any considerable portion of the pleasure-car traveling public. This situation is, of course, the logical result of several years intensive inspection and publicity aimed at bringing home to the public mind the necessity of observing the quarantine regulations. The quarantine enforcement involves the inspection of products to be shipped directly from the farm producing them to points outside the quarantine area, the inspection of shipments in the city of Philadelphia, the certification of shipments from farms in the outer borders of the quarantine area and the road patroling. Some idea of the extent of the certification work is indicated by the fact that 13,361 certificates were issued for the moving of farm products shipments to points outside the quarantined area during the 1926 season. All products move freely and within the quarantined area.

The mobile road patrol system proved to be a satisfactory type of road supervision in 1926. The purpose of this patrol is to intercept all vehicles such as motor trucks and pleasure cars which are suspected or are known to be carrying products contrary to regulations. Intentional violations of the quarantine were rigidly prosecuted.

During the flight period, an absolute embargo was imposed on movement of all farm products out of the Philadelphia market district, as the result of the extremely dense flight of the beetles during that time. For the past several years there has been noted a distinct flight period, during which time the great proportion of the beetles seem to have an instinctive urge to fly. During this flight period beetles may be found in numbers on any kind of produce, as well as on other articles of commerce, and inspection is quite impractical. The only effective means of handling the situation is an absolute embargo on all items which can be handled under our law.

The enforcement of the quarantine provisions relating to the movement of nursery stock is of a tremendous importance, especially since a large portion of Pennsylvania's extensive nursery industry is located in the vicinity of Philadelphia. Within the quarantined area there are approximately 648 commercial greenhouses, nurseries and perennial plant growers in addition to many small retail establishments. The shipment of all plants or plant products and soil from these greenhouses and nurseries is under supervision and during the year 122,649 shipments of such stock were certified. There are 287 outdoor nurseries within the quarantined area having more than 5,200 acres of growing ornamental stock, and 609 greenhouses with approximately 5,481,000 square feet of glass from which all shipments of plants are made under supervision. During the year

approximately 17,460 plants with soil balls were treated and certified for shipment out of the area and over six million seedling plants and cuttings were certified for shipment without soil.

It is extremely important to make rigid supervision of nursery shipments in order that other states will accept stock from Japanese beetle area. At the present time, a number of states require daily notification of all nursery stock shipped under certificate to their states, in order that re-inspection may be made at or upon arrival. It is extremely gratifying to note that there has not been a single instance so far as is known where any stage of the insect was found in a certified shipment upon arrival at its destination.

**Cooperation.** It should be noted that in the Japanese beetle project, close cooperation is maintained with the Federal Department of Agriculture throughout the work, and especially in the investigational phases of the work. Most of the investigational work has been carried on at the main field headquarters at Riverton, New Jersey, but conditions have now reached a point where much of it can be carried on to advantage within Pennsylvania. It is planned, therefore, to establish certain phases of the research work in eastern Pennsylvania, where conditions are now quite suitable for this work.

## European Corn Borer Control

The European corn borer (*Pyraustra nubilalis* Hubner), has become established in northwestern Pennsylvania and must now be regarded as one of the most serious insect infestations within the state. This insect has been present in the state since 1919 and its spread was extremely limited until the season of 1925. Thorough in part to very favorable climatic and environmental conditions in scouting at the end of the 1924 season showed that the infested

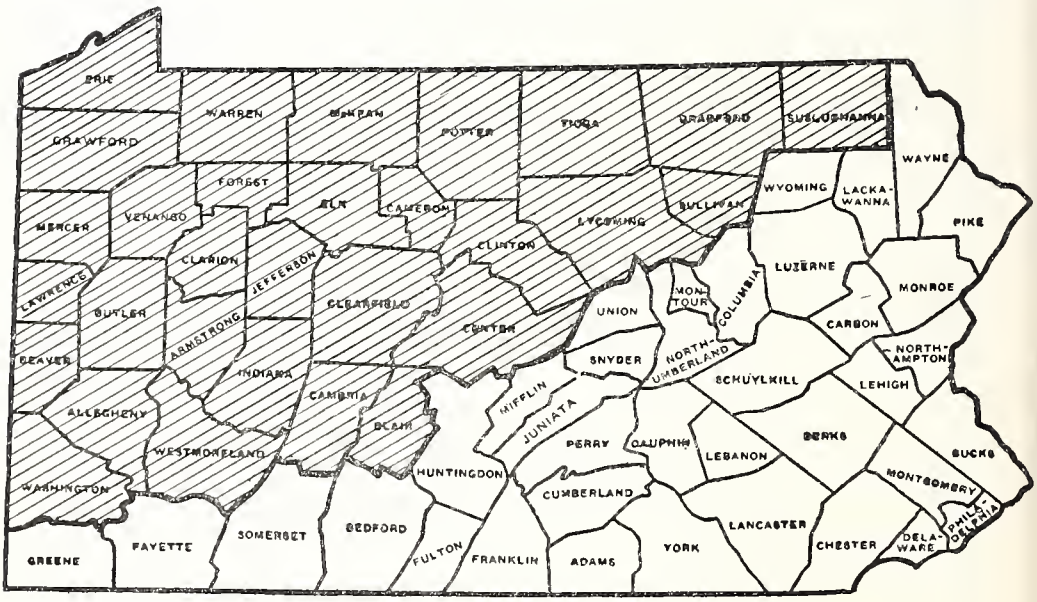


Fig. 15. Shaded portion is area quarantined because of the European corn borer

area comprised about 1999 square miles. The spread during the summer and fall of 1925, however, was very extensive and increased the infested area to a total of 9841 square miles, comprising all or portions of 16 counties. During the summer and fall of 1926, there was again a very extensive spread of the insect, to a total of approximately 24,300 square miles covering 30 counties. So far as can be determined, the unusual spread in 1925 and 1926 was due the Great Lakes region, coupled with the very heavy flight of moths across the lakes from Ontario. Not only did the actual area of infestation increase, but the intensity of infestation throughout the previously infested area likewise increased.

Economic Importance. The corn borer attacks field and sweet corn and has been known to cause a complete destruction of the crop in certain areas. An infestation of one larva per corn stalk may increase in one year to an infestation of 166 larvae per stalk. In some portions of the infested area in Pennsylvania, a heavier infestation than one larva per corn stalk is known to exist. In 1923, in Ontario, Canada, the average infestation was less than one larva per stalk and by 1925 there were many corn fields so badly infested that not a single bushel of corn was harvested. Such ravages give a sound basis for real alarm as to the control of the pest.

The control work is carried on in very close cooperation with the United States Department of Agriculture and is closely connected with the work in western New York, Ohio and Michigan. The field work in Pennsylvania is under the immediate supervision of a State Department employe who in turn is working with a Federal officer whose headquarters are at Cleveland, Ohio. It is hoped that by the wide adoption of control measures and the general observance of regulations that the insect can be held down to a point where the commercial loss will not be serious.

Scouting. During the summer and fall of 1926, scouting was carried on over a very extensive area in the western and northern portions of the state, to determine the limits of infestation. This scouting covered 158 townships in 25 counties beyond the 1925 line, and 76 townships were found to be infested.

Quarantine Enforcement. In the European corn borer quarantine, an absolute embargo is placed on the movement of corn and other carriers of the borer out of the area, no inspection or certification being allowed. Road inspectors were maintained at fixed points along the quarantine line. These patrols were maintained in most cases for 24 hours a day and the state police cooperated by lending a detail of officers. During the quarantine season in 1926, 324,950 vehicles were stopped for inspection from which 40,500 ears of corn were taken. Out of this number of ears, 265 were found to be actually infested with the insect.

General Bullettin Number 414 gives valuable information on control measures and the quarantine regulations for the corn borer.

## Oriental Fruit Moth

The Oriental fruit moth (*Laspeyresia molesta* Busck), the first severe outbreak of which occurred in 1923, is proving a real menace to the commercial production of peaches, apples and quinces in the state. This insect was introduced into the United States probably on flowering cherry trees about 10 years ago. It is believed that the pest is now present in practically all of the peach growing districts of the state. It was found in 1925 in nurseries in the vicinity of Pittsburgh, and in 1926 it appeared in large numbers in the peach orchards in Erie County. The damage is caused in two ways: First, the larvae feed in the young shoots of the peach trees, killing them back and causing them to take on a bushy growth; second, the larvae feed in the fruit of the peach, quince and apple, causing a wormy product which is often not evident from the exterior.

**Extensive Damage.** The Oriental fruit moth is especially destructive to the peaches ripening at and after the time of Elbertas. This is a mid-season variety, and the later ripening peaches are especially heavily infested, ofttimes running up as high as a complete infestation of every fruit. The fruit of quince is also heavily infested; in fact quinces grown in the infested districts are usually so badly

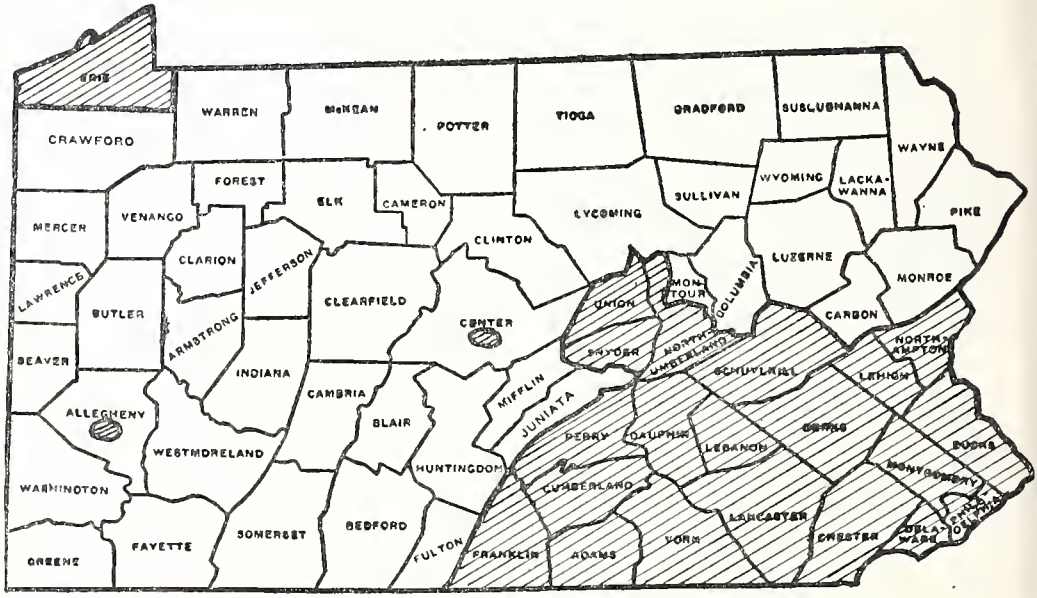


Fig. 16. Shaded portion is area known to be infested with Oriental fruit moth.

eaten that they are practically worthless. The insect, also, promises to become a serious pest of apple, causing an injury much like that of the codling moth.

The life history and other valuable information on this insect is contained in General Bulletin Number 405 of the Department.

Every effort is being made to develop an effective control measure. The fact that several generations of the insect appear each summer and that these generations overlap, giving all stages of the insect

on the trees during late summer, makes it extremely difficult to perfect a satisfactory control. The life history of the insect, including feeding habits, how attracted by baits and light of different kinds, range and time of flight, length of life of adults and effect of weather upon the activity of adults, is being studied in the hope of finding a basis for effective control.

**Parasites.** Considerable attention has also been given to the effectiveness of natural parasites as a control measure. One species, *Macroncentrus ancylivora* Roh., is more or less common throughout the southern portion of the state, and another species, *Glypta rufiscutellus* Cress., throughout the entire area where the moth has been found, but as yet neither species seems to be effective.

**Control.** A number of different control measures have been tried out, without complete satisfaction. The use of bait pans with a bait to attract the moths has been tried out extensively, with some success, but the method seems to be unsatisfactory as a practical control measure. Several materials have been used in an attempt to destroy the eggs of the moth, but without success. Pyrethrum soap-emulsion and sodium fluosilicate have been tried as larvicides, and prove to be more effective than nicotine. Dusting with nicotine, cyanide and other materials during periods of moth abundance has not given satisfactory results.

## Mexican Bean Beetle

The Mexican bean beetle (*Epilachna corrupta* Muls.) is another new pest first found in the state in portions of Greene and Washington Counties in 1924. Since that time it has extended its range to include the whole of Greene, Washington, Fayette, Beaver, Allegheny, Westmoreland, Somerset and Bedford Counties, and was also found in single isolated infestations in Venango and Dauphin Counties. Probably a detailed survey would show its presence more or

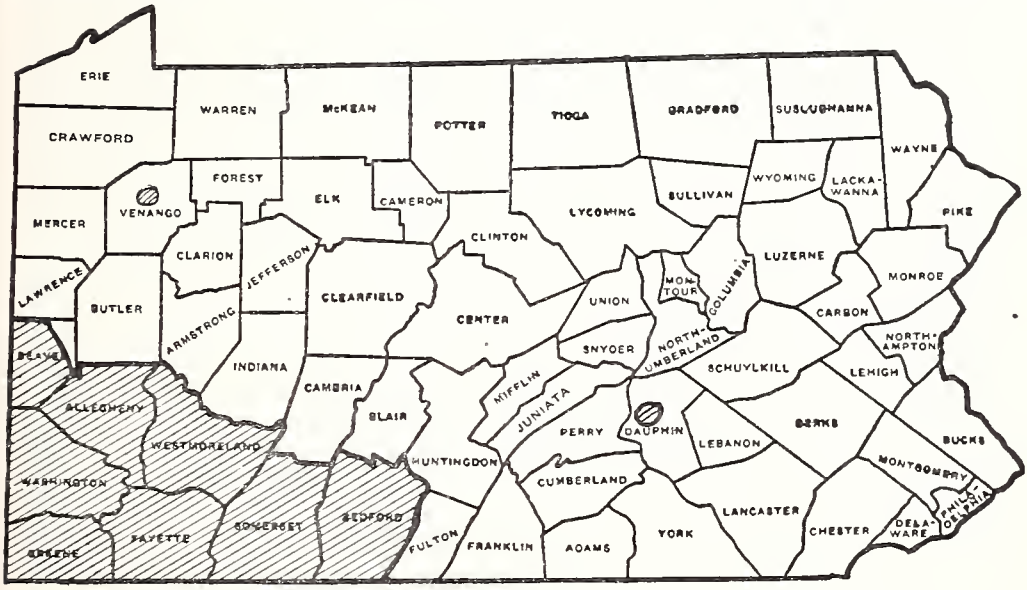


Fig. 17. Shaded portion is area infested with Mexican bean beetle.

less generally over the southwestern half of the state. In the season of 1926 the bean beetles were present in numbers sufficient to cause a very serious loss to garden beans grown in Greene County. In the other counties mentioned, the infestation is not heavy enough to result in any large amount of damage to the beans.

From field observations made in Greene County in 1926, the insect is found to have two generations each year. The first generation fed entirely on string beans, while the last generation fed for the most part on lima beans. Observations were made in Greene County to determine whether or not the insect is a pest of soy beans. Fortunately it seems that the beetle only attacks soy beans after garden beans are destroyed. No damage to the foliage of soy beans was noted in the heavily infested area. However, in other parts of the country, the Mexican bean beetle is known to be a pest of all varieties of garden beans, as well as cow peas and soy beans. General Bulletin Number 417 of this Department gives control measures and other information regarding the pest.

## Minor Insect Pests

As a result in part at least of more intensive development of the agriculture of the state, and in part due to the constant importation of plants, new pests appear from time to time. In connection with the general scouting work being carried on by this Bureau, a number of outbreaks more or less local, have been investigated. It frequently happens that a species of insect ordinarily of little or no economic importance suddenly develops into a local pest as a result of favorable conditions of one kind or another.

**A Flea Beetle Occurring As An Orchard Pest.** A small dark beetle bearing the scientific name of *Luperodes thorasicus,* formerly not known to occur in sufficient numbers to cause any economic damage, was found in an orchard in the central part of the state doing damage to the foliage of peach, apple, and plum, and damaging the young fruit of one variety of apples. The insect was reported to have been present the preceding year, and is believed to be increasing in numbers. This insect is known to have been in Pennsylvania since 1847 when the species was first taken and described. Its native food plant is believed to be white walnut *(Juglans cinerea.)* Nothing is known of the life history of this insect, and no report has ever been made of it causing any damage to cultivated crops. A definite spray program was followed out in the orchard in which this beetle occurred, but in spite of this fact the beetle did considerable damage, indicating that it may under certain favored conditions, be a serious orchard pest.

**The Apple and Thorn Skeletonizer.** The apple and thorn skeletonizer (*Hemerophila pariana* Clerck.) was found in Wayne and Monroe Counties doing considerable damage by defoliating apple trees, and also certain thorn trees (*Crataegus* sp.) This is the first wide distribution of this European pest noticed in the state. No damage was evident in orchards which had received the ordinary codling moth sprays. The pest has been known for some time in New York and other eastern states.

**The Birch Leaf Skeletonizer.** The birch leaf skeltonizer (*Bucculatrix canadensisella* Chamb.), a native species, became especially abundant in the northeastern corner of the state. Many of the birch trees were heavily attacked and their leaves took on a characteristic appearance.

**Locust Leaf Miner.** The locust leaf miner (*Chalepus dorsalis* Thumb.) was especially destructive over the entire southern half of the state, wherever the black locust was found. In one instance the locust trees were so badly damaged, and the leaves so much dried out that the beetles left the trees, going to a neighboring field in which soy beans were grown. Here they did considerable damage to the growing soy bean crop, so much so that the grower thought it advisable to harvest his beans several weeks before the usual harvesting time of soy beans.

**Imported Willow Leaf Beetle.** The imported willow leaf beetle (*Plagiodera versicolora* Larich.), another imported European species with but a limited distribution in the United States, was found for the first time in Pennsylvania outside of Philadelphia, at Harrisburg, and at Bethlehem. This species feeds on willow and poplar, and may well become a serious pest of these trees, especially in park and ornamental plantings.

## Plant Disease Control

Plant diseases such as potato wart and peach yellows would exact a tremendous toll from the annual value of crops produced in Pennsylvania if they were not held in check and the loss reduced from year to year. For example, as late as 1920, approximately eight per cent of the peach trees in the southeastern section of the state were infected with peach yellows. Through thorough inspection and the elimination of infected trees, the disease has been reduced until in 1926 the number of such trees was less than one-half of one per cent.

## No Recent Spread of Potato Wart

Potato wart, a disease which has menaced garden potato patches in certain sections of eleven counties in the anthracite and bituminous coal regions of Pennsylvania, has apparently not sperad outside the quarantine area during the past few years, due to the successful control work conducted by the Bureau of Plant Industry. In past years, when immune varieties were not planted, the disease was known to cause a total loss of the potato crop by reducing the tubers to warty masses.

The finding of the wart disease in a small mining town in Luzerne County located in the heart of the anthracite coal regions in the fall of 1918, caused a hurried survey of the surrounding areas to enable the Bureau to determine the area of infection so that a quarantine could be established early in 1919.

This survey established the existence of wart in four townships in two counties of Pennsylvania. The wart survey has been continued up to the present time 1926, with the last new infection being

found in 1922. The potato wart disease is now present in 813 gardens and 1 farm; these infections occurring in 58 towns or villages.

The control work was started in 1919 and consists of the enforcement of a quarantine which prevents the movement of potatoes or other dangerous material from the infected area. Within the quarantined area only the immune Spaulding Rose variety of potatoes is allowed to be grown and only after a permit has been issued. Fortunately, there are no essentially potato growing districts located within the quarantined area and the disease is confined to gardens. Taking the quarantined area as a whole, only 5.2 per cent of the gardens have been found infected.

A safety zone area is also provided. The safety zone area is distinct from the quarantine area in that no wart has ever been found within this area, but it is so close to the quarantined area where the disease was found, that it has been deemed advisable to keep it under rather close supervision, so that if infection should occur it could be discovered at once. In the safety zone area however, susceptible varieties are allowed to be planted. The safety zone includes portions of Luzerne, Carbon and Schuylkill Counties.

The result of the quarantine against potato wart gives each year a brighter hope that this bugbear of the potato industry which was valued at $37,700,000 in 1926, may be starved out of existence by the continuous planting of immune varieties. Potato wart is described in detail in General Bulletin No. 394 of the Department.

## Peach Yellows Successfully Controlled

Another successful year was completed in 1926 in the control of peach yellows, a disease which at one time threatened the peach industry in this state.

Peach yellows is a disease which becomes most evident by the yellowing of the leaves of peach trees. and eventually results in the destruction of the trees. The disease was present in from eight to ten per cent of the peach trees in southeastern Pennsylvania before 1920.

Control work, started in 1921, consists of a careful inspection of peach trees and the destruction of all trees which show any signs of the disease. During the past year a total of 624,743 trees were inspected and of this number 2,524 or less than a half of one per cent, were marked as diseased. This amount is slightly more than in 1925 but the difference is attributable to mere seasonal fluctuation and does not necessarily indicate any increase in yellows.

The inspection work in 1926 was carried on in Adams, Berks, Bucks, Cumberland, Chester, Dauphin, Delaware, Franklin, Lancaster, Lebanon, Lehigh, Montgomery, and York Counties.

Table 16 gives the results of the inspection work during the past six years, showing a decrease from almost five per cent of infection in 1921 to less than one-half per cent in 1926.

TABLE 16. Peach Yellows Inspection Results in Pennsylvania, 1921-1926

| Year | Orchards Inspected | Number Trees Inspected | Number Trees Blazed | Per cent yellows |
|---|---|---|---|---|
| 1921 | 324 | 287,466 | 17,376 | 4.45 |
| 1922 | 422 | 442,507 | 11,052 | 2.50 |
| 1923 | 417 | 482,614 | 10,698 | 2.21 |
| 1924 | 456 | 674,012 | 6,064 | .89 |
| 1925 | 408 | 655,493 | 2,326 | .35 |
| 1926 | 390 | 624,743 | 2,524 | .40 |

## White Pine Blister Rust

The white pine blister rust, a disease which is extremely destructive to young white five-needled pines, was first discovered in Pennsylvania in 1921 in the northern part of Wayne County. The disease is firmly established in New York and the New England States and in time it is almost sure to take a southward spread into Pennsylvania. The disease works in the bark and twigs of the branches of the pine, causing a girdling of the tree. It soon kills young trees, but affects old trees more slowly. The rust does not spread from one pine to another, but must come from the alternate hosts, the currants and gooseberries (*Ribes* spp.). Consequently, the most effective control is the removal of currants and gooseberries from the immediate neighborhood of pine. Most details regarding this disease are published in General Bulletin No. 426 of the Department.

The work on white pine blister rust in 1926 was carried on in cooperation with the Federal Office of Blister Rust Control. Under this arrangement a specialist was employed by the Federal Office to make a careful survey of Susquehanna County, similar to that carried out last year in Wayne County. This included scouting for the blister rust, and a survey of the wild Ribes (currants and gooseberries) in an attempt to estimate their relative numbers.

A similar survey, although of less intensive nature, was carried on by State specialists in Monroe, Pike, Lackawanna and Wyoming Counties. A single case of blister rust was found in each of the counties of Monroe, Pike and Lackawanna. In each case the rust was found on black currant, *Ribes nigrum*, and in each case only two plants were affected.

## Cedar Rust No Longer Troublesome

The removal of red cedar in the southern-tier counties as a means of eradicating the cedar rust from apple orchards has made rapid progress during the past few years. In the past red cedars have been responsible for considerable damage in apple orchards where the rusting of the fruit has reduced its commercial value. Progress in the removal of red cedar has reached a point where cedar rust is no longer a serious menace to apple production in the commercial belt of the state.

In 1926 only one case of rust was dealt with, an orchard in Franklin County, where considerable rust has developed in 1925 on susceptible varieties. The adjoining property was found on investigation to harbor numbers of small, red cedars, mostly in a woodland area next to the orchard. Arrangements were made between the orchard owner and the owner of the cedars whereby the former agreed to do the cutting of the offending trees if permission was given. This was done.

While rust has appeared on apples here and there in the southeastern counties during 1926, no cases were observed where any measurable amount of damage was done. No cases were encountered except the one mentioned above where the rust was plentiful enough to justify state action.

## More Seed Potatoes Certified

The object of seed potato certification is to make available for growers dependable sources of disease free seed adapted to Pennsylvania conditions. The certification project is limited to such counties as are fairly well adapted by nature for the production of high class seed potatoes and the work has not been pushed any more rapidly than it was felt conditions warranted. Table 17 shows the comparative production of certified seed potatoes since 1923, the large drop in number of bushels certified in 1925 being due to one county discontinuing the production of certified seed although still producing improved seed potatoes. It should be further noted also that the policy has been not to encourage large numbers of growers to grow small lots of seed for certification, but rather to encourage fewer growers to plant larger individual acreage for certification purposes, since to grow potatoes suitable for certified seed, it is felt that only the best potato growers should undertake seed production.

TABLE 17. Seed Potato Certification, 1923-1926

| | 1923 | 1924 | 1925 | 1926 |
|---|---|---|---|---|
| Number of Growers Entered | 160 | 123 | 69 | 75 |
| Number of Acres Entered | 983 | 652 | 186.5 | 202. |
| Number of Growers Certified | 63 | 77 | 43 | 56 |
| Number of Acres Certified | 315 | 266 | 100.8 | 158.25 |
| Number of Bushels Certified | 67,000 | 62,035 | 25,965 | 41,115 |

The results of the certification work in 1926 show progress over 1925 in spite of the fact that the season of 1926 was very unfavorable for potato production. Late blight, though quite prevalent in all parts of Pennsylvania was well controlled in the certified seed fields by continuous and thorough spraying. A total of 41,115 bushels of potatoes were certified, an increase of 15,150 bushels over 1925.

Recent developments in the certification work include the thorough inspection of the potatoes before shipment in the spring and a follow-up of shipments to discover the condition upon arrival. An

effort is also made to find the kind of stand and yield secured from this seed.

The outstanding change in the seed potato certification work this year was the adoption of grading standards under the Markets Act. This standard establishes two grades, i. e., Pennsylvania Certified seed grade and Pennsylvania Field Certified seed grade. The Pennsylvania certified seed grade is as nearly free of defective, injured or diseased potatoes as is practically attainable and establishes three sizes, (1) Standard, (2) Second and (3) Combination Size.

The Pennsylvania Field Certified seed grade while requiring the same standards for field inspection and certification may be sold field run or in any grade established between the buyer and grower.

Each grade is identified by a suitable colored tag, each tag clearly indicating the grade.

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## Bureau of Statistics

The work of the Bureau of Statistics is the gathering and compiling of statistical information relating to Pennsylvania agriculture and the dissemination of this and other available data of such nature as to keep all the facts concerning the farmer's business and that of his competitors before him.

Pennsylvania, having sixty-seven counties, and over 200,000 farms, offers no small undertaking to the compiler of reliable and trustworthy crop and livestock information, but it is imperative that the farmers and those engaged in allied industries should have this information. Farmers benefit from reliable crop reports in several ways; first, as a means of keeping informed of the condition and crop prospects throughout his own state and in other states where the crops in which he is particularly interested are grown; second, as a means of judging the probable relative supply of surplus crops he is producing, as well as competing crops, and whether it is likely to pay him to sell his surpluses promptly or hold them for a period with a reasonable prospect of realizing higher prices later; and third, as a means of judging whether it will probably pay him to make any change the coming year in his established cropping system.

### Federal-State Crop Reporting

For ten years prior to 1924 this Bureau gathered and compiled statistics concerning major crops and classes of livestock regularly each month except February and September. These together with additional special information compiled by the Bureau, and other available agricultural data, were disseminated so that the farmers of Pennsylvania might have the important facts concerning their business and its broad problems.

The Division of Crop and Livestock Estimates of the Federal Department of Agriculture, during the same period maintained a Pennsylvania-New Jersey field office at Philadelphia, from which were issued regular monthly crop and livestock reports and certain other special reports of a varied nature.

The State Department of Agriculture entered into an agreement for a joint Federal-State Crop Reporting service which became effective March 1, 1924. Twenty-eight states now cooperate in a similar manner with the Federal Department in the compilation and dissemination of uniform agricultural data for the respective states.

**The Reporting Service in Operation.** The crop reporting service follows the uniform procedure of the Federal Department of Agriculture in its statistical work in each of the States, continuing in addition such special inquiries as were previously conducted by the State Bureau of Statistics. Regular inquiries are made on the principal field crops each month, except January which is devoted entirely to livestock.

**Intentions-to-Plant Report.** Prior to planting, an inquiry is made concerning farmers' plans with respect to the acreages intended for the various crops. This information is published in ample time for careful study by progressive and wide-awake farmers so that if the situation in the country at large appears to warrant it, a change can be made in the anticipated plantings.

**Reports on Acreage and Crop Conditions.** After plantings have been made, estimates are made of the acreage, then follows a successive record of crop conditions through the growing season, with forecasts of the production of the principal crops, and preliminary estimates after harvest.

**Special Reports.** To comply with the frequent requests of growers of a specific commodity, such as potatoes, apples, grapes, or tobacco, separate reports are prepared for single commodities in which current data for the important producing States are given with comparative information and comment on the present situation.

## Crop Production in 1926

In spite of an adverse season in 1926, Pennsylvania has retained a high rank among the states in crop production, being second in the production of buckwheat, fourth in all apples and fifth in commercial apples, fifth in peaches and in grapes, sixth in potatoes, sixth in tobacco, although first in cigar-leaf tobacco, seventh in rye and in pears, seventh in tame hay and ninth in all hay, eighth in winter wheat and thirteenth in all wheat, and fifteenth in corn.

TABLE 18. Revised Pennsylvania Crop Data for 1925, the 1921-1925 Average and Preliminary Estimates for 1926

| Crop and unit | Year | Acres | Production | | Quality | Farm Value Dec. 1 | | Value per acre |
|---|---|---|---|---|---|---|---|---|
| | | | Per acre | Total | | Per unit | Total | |
| CORN: | | | | | | | | |
| (bus.) | 1925 | 1,408,000 | 51.0 | 71,808,000 | 86 | .80 | 57,446,000 | 40.80 |
| Ave. | 1921—'25 | 1,485,400 | 44.0 | 65,395,200 | 79 | .80 | 52,400,200 | 35.28 |
| | 1926 | 1,394,000 | 41.0 | 57,154,000 | 77 | .78 | 44,580,000 | 31.98 |
| WINTER WHEAT: | 1925 | 1,125,000 | 20.0 | 22,500,000 | 94 | 1.47 | 33,075,000 | 29.40 |
| Ave. | 1921—'25 | 1,241,600 | 18.3 | 22,709,800 | 91 | 1.19 | 27,106,200 | 21.83 |
| | 1926 | 1,170,000 | 20.0 | 23,400,000 | 92 | 1.29 | 30,186,000 | 25.80 |
| OATS: | | | | | | | | |
| (bus.) | 1925 | 1,157,000 | 35.0 | 40,495,000 | 91 | .51 | 20,652,000 | 17.85 |
| Ave. | 1921—'25 | 1,148,200 | 32.3 | 37,140,000 | 88 | .52 | 19,144,200 | 16.61 |
| | 1926 | 1,111,000 | 32.0 | 35,552,000 | 78 | .49 | 17,420,000 | 15.68 |
| BARLEY: | | | | | | | | |
| (bus.) | 1925 | 15,000 | 25.5 | 383,000 | 92 | .86 | 329,000 | 21.93 |
| Ave. | 1921—'25 | 12,600 | 24.3 | 306,000 | 91 | .76 | 231,800 | 18.40 |
| | 1926 | 16,000 | 25.0 | 400,000 | 83 | .80 | 320,000 | 20.00 |
| RYE: | | | | | | | | |
| (bus.) | 1925 | 113,000 | 17.0 | 1,921,000 | 94 | 1.05 | 2,017,000 | 17.85 |
| Ave. | 1921—'25 | 174,600 | 16.6 | 2,903,200 | 93 | .96 | 2,779,400 | 15.92 |
| | 1926 | 93,000 | 16.0 | 1,488,000 | 91 | .97 | 1,443,000 | 15.52 |
| BUCKWHEAT: | | | | | | | | |
| (bus.) | 1925 | 194,000 | 23.0 | 4,462,000 | 88 | .91 | 4,060,000 | 20.93 |
| Ave. | 1921—'25 | 217,200 | 21.5 | 4,665,400 | 90 | .87 | 4,074,000 | 18.76 |
| | 1926 | 190,000 | 19.0 | 3,610,000 | 78 | .89 | 3,213,000 | 16.91 |
| WHITE POTATOES: | | | | | | | | |
| (bus.) | 1925 | 202,000 | 123.0 | 24,846,000 | 91 | 1.94 | 48,201,000 | 238.62 |
| Ave. | 1921—'25 | 233,200 | 107.0 | 24,957,800 | 88 | 1.16 | 28,952,000 | 124.15 |
| | 1926 | 198,000 | 112.0 | 22,176,000 | 82 | 1.70 | 37,699,000 | 190.40 |
| SWEET POTATOES: | 1925 | 1,000 | 115.0 | 115,000 | 90 | 2.10 | 242,000 | 242.00 |
| Ave. | 1921—'25 | 1,600 | 127.5 | 204,000 | 92 | 1.51 | 307,800 | 192.38 |
| | 1926 | 1,000 | 110.0 | 110,000 | 87 | 1.30 | 143,000 | 143.00 |
| TOBACCO: | | | | | | | | |
| (lbs.) | 1925 | 41,000 | 1,400 | 57,400,000 | 91 | .104 | 5,970,000 | 145.60 |
| Ave. | 1921—'25 | 43,400 | 1,345 | 58,386,000 | 89 | .143 | 8,342,400 | 192.22 |
| | 1926 | 33,000 | 1,320 | 43,560,000 | 82 | .105 | 4,574,000 | 138.60 |
| TAME HAY: | | | | | | | | |
| (tons) | 1925 | 3,038,000 | 1.39 | 4,225,000 | 89 | 17.00 | 71,825,000 | 23.64 |
| Ave. | 1921—'25 | 3,000,400 | 1.37 | 4,100,400 | 93* | 16.83 | 68,991,400 | 22.99 |
| | 1926 | 2,916,000 | 1.30 | 3,804,000 | 87 | 18.50 | 70,374,000 | 24.13 |
| WILD HAY: | | | | | | | | |
| (tons) | 1925 | 20,000 | 1.25 | 25,000 | 87 | 12.00 | 300,000 | 15.00 |
| Ave. | 1921—'25 | 22,200 | 1.23 | 27,400 | 86* | 11.92 | 326,800 | 14.72 |
| | 1926 | 20,000 | 1.25 | 25,000 | 83 | 13.00 | 325,000 | 16.25 |
| ALL HAY: | | | | | | | | |
| (tons) | 1925 | 3,058,000 | 1.39 | 4,250,000 | 89 | 16.97 | 72,125,000 | 23.59 |
| Ave. | 1921—'25 | 3,022,600 | 1.37 | 4,127,800 | 93* | 16.79 | 69,310,200 | 22.93 |
| | 1926 | 2,936,000 | 1.30 | 3,829,000 | 87 | 18.46 | 70,699,000 | 24.08 |
| CLOVERSEED: | | | | | | | | |
| (bus.) | 1925 | 16,000 | 1.8 | 29,000 | 86 | 15.70 | 455,000 | 28.46 |
| Ave. | 1921—'25 | 16,600 | 1.4 | 24,000 | 87** | 12.62 | 303,000 | 18.25 |
| | 1926 | 8,000 | 1.5 | 12,000 | 83 | 18.50 | 222,000 | 27.75 |
| APPLES (Total) | | | | | | | | |
| (bus.) | 1925 | ---------- | -------- | 7,300,000 | 72 | 1.46 | 10,658,000 | -------- |
| Ave. | 1921—'25 | ---------- | -------- | 7,912,600 | 71 | 1.22 | 9,6[illegible]7,600 | -------- |
| | 1926 | ---------- | -------- | 17,000,000 | 89 | .76 | 12,9[illegible],000 | -------- |
| APPLES (Comm'l) | | | | | | | | |
| (bbls.) | 1925 | ---------- | -------- | 1,011,000 | 72 | 4.20 | 4,24[illegible],000 | -------- |
| Ave. | 1921—'25 | ---------- | -------- | 898,800 | 71 | 3.54 | 3,180,000 | -------- |
| | 1926 | ---------- | -------- | 1,796,000 | 89 | 2.25 | 4,041,000 | -------- |
| PEACHES: | | | | | | | | |
| (bus.) | 1925 | ---------- | -------- | 600,000 | 76 | 2.40 | 1,440,000 | -------- |
| Ave. | 1921—'25 | ---------- | -------- | 1,226,400 | 84 | 1.99 | 2,444,400 | -------- |
| | 1926 | ---------- | -------- | 2,498,000 | 86 | .96 | 2,400,000 | -------- |
| PEARS: | | | | | | | | |
| (bus.) | 1925 | ---------- | -------- | 468,000 | 85 | 1.35 | 725,000 | -------- |
| Ave. | 1921—'25 | ---------- | -------- | 501,000 | 84 | 1.35 | 678,400 | -------- |
| | 1926 | ---------- | -------- | 748,000 | 92 | 1.15 | 860,000 | -------- |
| GRAPES: | | | | | | | | |
| (tons) | 1925 | ---------- | -------- | 11,180 | 85 | 95.00 | 1,062,000 | -------- |
| Ave. | 1923—'25 | ---------- | -------- | 15,810 | 86 | 81.34 | 1,285,700 | -------- |
| | 1926 | ---------- | -------- | 25,110 | 88 | 34.00 | 854,000 | -------- |

*Four year average. **Two year average.

The estimated value of all crops produced on Pennsylvania farms in 1926 is $260,000,000, which is approximately the same as the average of the previons five years but a decline of abont $40,000,000 from the estimate for 1925, an exceptionally favorable year. The estimated total value of all farm crops for the five years previous to 1926 are: 1925, $299,849,000; 1924, $270,540,000; 1923, $258,-064,000; 1922, $244,523,000; 1921, $227,344,000.

Hay was again the leading crop in Pennsylvania in total value and corn retained second place. Potatoes continued in third place, wheat fonrth, and oats, apples and tobacco following in their nsnal ranking.

Table 18 gives the acreage, prodnction and value of the leading Pennsylvania crops for the years 1925 and 1926, and the five year average 1921-1925. The summary of valnes does not fnlly reflect the money return to farmers on their crops since the oats and the corn are marketed largely through livestock, chiefly in the form of pork and dairy products. These latter products are on a snbstantially higher price level and will return a higher value per bnshel on the corn and oats ntilized in this manner than the average given in the table.

**TABLE 19. Average Acreages, Acre Yields and Prices of the Leading Pennsylvania Crops, Five-Year Periods, 1866 to 1925, Also 1926**

| Period | Tame Hay | | | Corn | | |
|---|---|---|---|---|---|---|
| | Acreage | Tons per Acre | Price per Ton | Acreage | Bushels per Acre | Price per Bu. |
| 1866—1870 | 1,849,200 | 1.31 | $11.47 | 986,400 | 33.8 | $0.72 |
| 1871—1875 | 2,147,000 | 1.06 | 16.98 | 1,092,800 | 36.6 | .59 |
| 1876—1880 | 2,523,500 | 1.28 | 11.29 | 1,271,700 | 35.8 | .51 |
| 1881—1885 | 2,711,700 | 1.14 | 12.23 | 1,397,000 | 29.4 | .62 |
| 1886—1890 | 2,976,100 | 1.21 | 9.94 | 1,399,400 | 30.0 | .50 |
| 1891—1895 | 3,063,500 | 1.10 | 11.98 | 1,308,500 | 30.8 | .52 |
| 1896—1900 | 2,558,400 | 1.25 | 10.61 | 1,269,200 | 34.0 | .38 |
| 1901—1905 | 3,072,700 | 1.32 | 12.89 | 1,453,900 | 35.0 | .58 |
| 1906—1910 | 3,083,400 | 1.34 | 14.12 | 1,423,200 | 36.7 | .63 |
| 1911—1915 | 3,115,400 | 1.29 | 15.90 | 1,466,000 | 41.4 | .69 |
| 1916—1920 | 2,992,800 | 1.46 | 20.12 | 1,526,300 | 42.1 | 1.31 |
| 1921—1925 | 3,004,000 | 1.37 | 16.83 | 1,488,000 | 44.0 | .80 |
| 1926 | 2,916,000 | 1.30 | 18.50 | 1,394,000 | 41.0 | .78 |

| Period | Winter Wheat | | | White Potatoes | | |
|---|---|---|---|---|---|---|
| | Acreage | Bushels per Acre | Price per Bu. | Acreage | Bushels per Acre | Price per Bu. |
| 1866—1870 | 1,178,500 | 12.6 | $1.40 | 145,600 | 90.2 | $0.61 |
| 1871—1875 | 1,117,700 | 14.0 | 1.27 | 113,100 | 97.2 | .54 |
| 1876—1880 | 1,445,000 | 14.3 | 1.16 | 155,800 | 77.3 | .50 |
| 1881—1885 | 1,485,000 | 12.6 | 1.06 | 193,000 | 73.5 | .53 |
| 1886—1890 | 1,387,600 | 12.0 | .92 | 196,100 | 67.0 | .55 |
| 1891—1895 | 1,268,500 | 15.1 | .74 | 202,200 | 79.3 | .48 |
| 1896—1900 | 1,440,400 | 15.7 | .76 | 180,700 | 74.5 | .45 |
| 1901—1905 | 1,616,700 | 16.0 | .83 | 247,600 | 86.8 | .62 |
| 1906—1910 | 1,476,700 | 18.1 | .94 | 265,800 | 84.8 | .64 |
| 1911—1915 | 1,291,400 | 17.0 | .98 | 269,600 | 85.8 | .70 |
| 1916—1920 | 1,403,400 | 17.5 | 1.94 | 269,600 | 90.7 | 1.41 |
| 1921—1925 | 1,243,800 | 18.3 | 1.19 | 235,200 | 107.1 | 1.16 |
| 1926 | 1,170,000 | 20.0 | 1.29 | 198,000 | 112.1 | 1.70 |

Continuation of Table 19

| Period | Oats | | | Tobacco | | |
|---|---|---|---|---|---|---|
| | Acreage | Bushels per Acre | Price per Bu. | Acreage | Pounds per Acre | Price per Lb. |
| 1866—1870 | 1,608,700 | 31.3 | $0.42 | 5,300 | 836 | $0.[illegible]02 |
| 1871—1875 | 1,037,400 | 29.3 | .42 | 9,5[illegible]0 | 1259 | .115 |
| 1876—1880 | 1,148,600 | 31.6 | .32 | 19,700 | 1278 | .0[illegible]5 |
| 1881—1885 | 1,258,400 | 28.7 | .41 | 28,200 | 1160 | .117 |
| 1886—1890 | 1,314,400 | 24.8 | .35 | 26,000 | 1239 | .1[illegible]8 |
| 1891—1895 | 1,177,300 | 26.6 | .35 | 24,2[illegible]0 | 1144 | .121 |
| 1896—1900 | 1,172,900 | 29.3 | .28 | 18,800 | 1337 | .074 |
| 1901—1905 | 1,204,700 | 30.2 | .37 | 16,300 | 1373 | .077 |
| 1906—1910 | 1,091,000 | 28.8 | .47 | 34,400 | 1311 | .098 |
| 1911—1915 | 1,117,400 | 32.1 | .46 | 38,700 | 1376 | .0[illegible]7 |
| 1916—1920 | 1,175,200 | 35.1 | .72 | 41,800 | 1398 | .173 |
| 1921—1925 | 1,160,200 | 32.4 | .52 | 43,400 | 1358 | .143 |
| 1926 | 1,111,000 | 32.0 | .49 | 33,000 | 1320 | .105 |

## Statistical Material Widely Used

Surprising increases in the use of statistical material and in the requests coming from farmers' organizations and government, college, research and business agencies, for special and exhaustive compilations of available data and for new data, have occurred in recent years. Measurements of the increased demand upon the statisticians for such specialized summaries is scarcely possible, but it has more than doubled in the past three years and has required a correspondingly greater share of the time and effort of the crop reporting office.

These numerous requests insure wide use of the compiled information and fully attest the complete utility of the data collected. Service has been gladly rendered and will continue so, increasing and improving in the future as facilities permit.

## Crop and Livestock Trends

Statistics are extremely important from the historical standpoint since they are the only way to determine longtime trends in production. These data very definitely reveal changes that have occurred in the production of crops, such as potatoes, wheat, and corn, during the last 60 years. Increases in the acre yields of corn, wheat and potatoes are among the signficant facts disclosed by a study of these records. See tables 20 and 21. Such progress in the efficient production of food products is substantial evidence of the value of modern improved methods. It is likewise revealed that no extensive changes have been made in the acreages of the important crops during the past 40 years, indicating the stability of Pennsylvania's well diversified agriculture.

TABLE 20. Acreage, Yield per Acre, Production, Farm Price and Total Value of Wheat, 1866 to 1926

| Date | Pennsylvania | | | | |
|---|---|---|---|---|---|
| | Acreage | Yield per acre | Production | Farm Price | Farm Value Dec. 1 |
| | Acres | Bu. | Bushels | Cts. | Dollars |
| 1866 | 956,333 | 11.0 | 10,519,660 | 186 | 19,532,331 |
| 1867 | 1,200,000 | 12.5 | 15,000,000 | 174 | 26,110,315 |
| 1868 | 1,195,312 | 12.8 | 15,300,000 | 147 | 22,540,179 |
| 1869 | 1,114,864 | 14.8 | 16,500,000 | 101 | 16,735,341 |
| 1870 | 1,426,250 | 12.0 | 17,115,000 | 114 | 19,511,715 |
| 1871 | 1,193,765 | 16.2 | 19,330,000 | 130 | 25,217,221 |
| 1872 | 1,074,351 | 10.8 | 11,603,000 | 148 | 17,162,985 |
| 1873 | 1,094,929 | 14.2 | 15,548,000 | 138 | 21,475,138 |
| 1874 | 1,124,054 | 14.8 | 16,636,000 | 109 | 18,151,091 |
| 1875 | 1,101,449 | 13.8 | 15,200,000 | 112 | 17,095,031 |
| 1876 | 1,419,696 | 13.2 | 18,740,000 | 115 | 21,471,127 |
| 1877 | 1,400,000 | 13.0 | 18,200,000 | 132 | 24,077,821 |
| 1878 | 1,473,000 | 15.0 | 22,095,000 | 97 | 21,389,371 |
| 1879 | 1,458,000 | 15.3 | 22,307,400 | 132 | 29,445,768 |
| 1880 | 1,474,292 | 15.0 | 22,114,380 | 109 | 24,104,674 |
| 1881 | 1,503,800 | 12.5 | 18,797,000 | 134 | 25,187,980 |
| 1882 | 1,488,700 | 13.6 | 20,300,700 | 105 | 21,315,735 |
| 1883 | 1,518,474 | 13.2 | 20,043,800 | 108 | 21,647,304 |
| 1884 | 1,533,660 | 13.6 | 20,820,000 | 86 | 17,905,200 |
| 1885 | 1,380,294 | 9.7 | 13,325,000 | 96 | 12,792,000 |
| 1886 | 1,435,506 | 12.7 | 18,255,000 | 83 | 15,151,650 |
| 1887 | 1,421,151 | 9.7 | 13,785,000 | 81 | 11,165,850 |
| 1888 | 1,392,728 | 13.5 | 18,802,000 | 107 | 20,118,140 |
| 1889 | 1,350,946 | 12.3 | 16,617,000 | 85 | 14,124,141 |
| 1890 | 1,337,437 | 12.0 | 16,049,244 | 99 | 15,888,752 |
| 1891 | 1,337,437 | 15.6 | 20,864,017 | 100 | 20,864,017 |
| 1892 | 1,293,610 | 14.6 | 18,886,706 | 81 | 15,298,232 |
| 1893 | 1,280,673 | 14.0 | 17,929,422 | 65 | 11,654,124 |
| 1894 | 1,227,679 | 15.0 | 18,415,185 | 56 | 10,312,504 |
| 1895 | 1,203,125 | 16.6 | 19,971,875 | 65 | 12,981,719 |
| 1896 | 1,239,219 | 14.0 | 17,349,066 | 83 | 14,399,725 |
| 1897 | 1,434,498 | 19.7 | 28,259,611 | 91 | 25,716,246 |
| 1898 | 1,520,568 | 17.5 | 26,609,940 | 68 | 18,094,759 |
| 1899 | 1,505,362 | 13.6 | 20,472,923 | 66 | 13,512,129 |
| 1900 | 1,502,521 | 13.5 | 20,281,334 | 72 | 14,602,560 |
| 1901 | 1,676,070 | 17.1 | 28,660,797 | 72 | 20,635,774 |
| 1902 | 1,558,745 | 15.8 | 24,638,171 | 73 | 17,978,565 |
| 1903 | 1,669,131 | 15.6 | 26,038,444 | 79 | 20,570,371 |
| 1904 | 1,550,210 | 14.1 | 21,857,961 | 108 | 23,606,598 |
| 1905 | 1,629,279 | 17.1 | 27,860,671 | 87 | 24,238,784 |
| 1906 | 1,642,553 | 17.7 | 29,073,188 | 76 | 22,095,623 |
| 1907 | 1,618,000 | 18.6 | 30,095,000 | 96 | 28,891,000 |
| 1908 | 1,590,000 | 18.5 | 29,415,000 | 99 | 29,121,000 |
| 1909 | 1,224,000 | 17.6 | 21,546,000 | 109 | 23,485,000 |
| 1910 | 1,309,000 | 17.8 | 23,300,000 | 92 | 21,436,000 |
| 1911 | 1,289,000 | 13.5 | 17,402,000 | 92 | 16,010,000 |
| 1912 | 1,240,000 | 18.0 | 22,320,000 | 95 | 21,204,000 |
| 1913 | 1,286,000 | 17.0 | 21,862,000 | 91 | 19,894,000 |
| 1914 | 1,312,000 | 18.1 | 23,747,000 | 104 | 24,697,000 |
| 1915 | 1,330,000 | 18.5 | 24,605,000 | 104 | 25,589,000 |
| 1916 | 1,375,000 | 19.0 | 26,125,000 | 162 | 42,322,000 |
| 1917 | 1,399,000 | 17.5 | 24,482,000 | 205 | 50,188,000 |
| 1918 | 1,480,000 | 17.0 | 25,160,000 | 214 | 53,842,000 |
| 1919 | 1,409,000 | 17.5 | 24,658,000 | 216 | 53,261,000 |
| 1920 | 1,354,000 | 16.6 | 22,476,000 | 170 | 38,209,000 |
| 1921 | 1,350,000 | 17.5 | 23,625,000 | 103 | 24,334,000 |
| 1922 | 1,325,000 | 18.5 | 24,512,000 | 110 | 26,963,000 |
| 1923 | 1,272,000 | 19.0 | 24,168,000 | 100 | 24,168,000 |
| 1924 | 1,136,000 | 16.5 | 18,744,000 | 144 | 26,991,000 |
| 1925 | 1,125,000 | 20.0 | 22,500,000 | 147 | 33,075,000 |
| 1926 | 1,170,000 | 20.0 | 23,400,000 | 129 | 30,186,000 |

TABLE 21. Acreage, Yield per Acre, Production, Price per Bushel, Total Value of Corn, 1866-1926

| Year | Pennsylvania | | | | |
|---|---|---|---|---|---|
| | Acreage | Yield per acre | Production | Price per bu. | Farm value Dec. 1 |
| | Acres | Bu. | Bushels | Cts. | Dollars |
| 1866 | 1,041,624 | 34.4 | 35,831,877 | 63 | 22,675,249 |
| 1867 | 951,781 | 32.0 | 30,457,000 | 84 | 25,526,282 |
| 1868 | 913,685 | 35.0 | 31,979,000 | 74 | 23,793,899 |
| 1869 | 939,490 | 31.4 | 29,500,000 | 73 | 21,505,547 |
| 1870 | 1,085,642 | 35.8 | 38,866,000 | 67 | 26,166,517 |
| 1871 | 1,105,746 | 35.5 | 39,254,000 | 69 | 27,181,277 |
| 1872 | 1,127,282 | 39.0 | 43,964,000 | 53 | 23,364,393 |
| 1873 | 1,052,108 | 35.1 | 36,929,000 | 55 | 20,402,762 |
| 1874 | 1,078,946 | 33.2 | 35,821,000 | 69 | 24,548,206 |
| 1875 | 1,100,000 | 40.0 | 44,000,000 | 51 | 22,249,346 |
| 1876 | 1,207,142 | 35.0 | 42,250,000 | 50 | 21,[illegible]99,267 |
| 1877 | 1,246,060 | 33.0 | 41,1[illegible]0,000 | 50 | 20,400,000 |
| 1878 | 1,259,000 | 35.0 | 44,065,000 | 48 | 21,108,982 |
| 1879 | 1,271,600 | 35.0 | 44,506,000 | 54 | 24,033,2[illegible]0 |
| 1880 | 1,374,500 | 40.6 | 55,804,700 | 53 | 29,576,491 |
| 1881 | 1,374,500 | 25.2 | 34,599,000 | 75 | 25,949,2[illegible]0 |
| 1882 | 1,388,245 | 31.3 | 43,518,800 | 70 | 30,463,160 |
| 1883 | 1,402,127 | 27.0 | 37,857,400 | 67 | 25,3[illegible]4,458 |
| 1884 | 1,403,000 | 31.0 | 43,466,000 | 52 | 22,602,3[illegible]0 |
| 1885 | 1,417,030 | 32.5 | 46,074,000 | 49 | 22,576,260 |
| 1886 | 1,438,285 | 28.2 | 40,545,000 | 47 | 19,056,150 |
| 1887 | 1,394,561 | 32.2 | 44,905,000 | 50 | 22,452,500 |
| 1888 | 1,397,350 | 32.5 | 45,414,000 | 50 | 22,707,000 |
| 1889 | 1,383,377 | 29.8 | 41,225,000 | 46 | 18,963,332 |
| 1890 | 1,383,377 | 27.5 | 38,043,000 | 60 | 22,825,721 |
| 1891 | 1,397,211 | 33.3 | 46,527,000 | 57 | 26,520,482 |
| 1892 | 1,299,406 | 30.5 | 39,632,000 | 57 | 22,590,173 |
| 1893 | 1,273,418 | 24.5 | 31,198,741 | 49 | 15,287,383 |
| 1894 | 1,273,418 | 32.0 | 40,749,376 | 55 | 22,412,157 |
| 1895 | 1,298,886 | 33.5 | 43,512,681 | 39 | 16,969,946 |
| 1896 | 1,311,875 | 40.0 | 52,475,000 | 33 | 17,316,750 |
| 1897 | 1,246,281 | 36.0 | 44,866,116 | 34 | 15,254,479 |
| 1898 | 1,221,355 | 37.0 | 45,190,135 | 40 | 18,076,054 |
| 1899 | 1,257,996 | 32.0 | 40,255,872 | 41 | 16,504,908 |
| 1900 | 1,308,316 | 25.0 | 32,707,900 | 45 | 14,718,555 |
| 1901 | 1,457,238 | 35.0 | 51,003,330 | 62 | 31,622,065 |
| 1902 | 1,486,383 | 36.1 | 53,638,426 | 58 | 31,121,887 |
| 1903 | 1,456,655 | 31,2 | 45,447,636 | 57 | 25,905,153 |
| 1904 | 1,427,522 | 34.0 | 48,535,748 | 59 | 28,636,091 |
| 1905 | 1,441,797 | 38.9 | 56,085,903 | 54 | 30,283,388 |
| 1906 | 1,441,797 | 40.2 | 57,960,239 | 52 | 30,139,3[illegible]4 |
| 1907 | 1,413,000 | 32.5 | 45,922,000 | 64 | 29,290,000 |
| 1908 | 1,450,000 | 39.5 | 57,275,000 | 73 | 41,811,000 |
| 1909 | 1,381,000 | 30.1 | 41,494,000 | 70 | 29,046,000 |
| 1910 | 1,420,000 | 41.0 | 58,630,000 | 59 | 34,592,000 |
| 1911 | 1,435,000 | 44.5 | 63,858,000 | 68 | 43,423,000 |
| 1912 | 1,449,000 | 42.5 | 61,582,000 | 63 | 38,797,000 |
| 1913 | 1,463,000 | 39.0 | 57,057,000 | 72 | 41,081,000 |
| 1914 | 1,463,000 | 42.5 | 62,178,000 | 73 | 45,390,000 |
| 1915 | 1,520,000 | 38.5 | 58,520,000 | 70 | 40,964,000 |
| 1916 | 1,450,000 | 39.0 | 56,550,000 | 97 | 54,854,000 |
| 1917 | 1,575,000 | 39.0 | 61,425,000 | 153 | 93,9[illegible]0,000 |
| 1918 | 1,470,000 | 40.0 | 59,100,000 | 155 | 91,698,000 |
| 1919 | 1,581,000 | 47.0 | 74,307,000 | 147 | 109,231,000 |
| 1920 | 1,556,000 | 45.0 | 70,020,000 | 100 | 70,020,000 |
| 1921 | 1,589,000 | 48.0 | 76,272,000 | 55 | 41,950,000 |
| 1922 | 1,573,000 | 44.0 | 69,212,000 | 72 | 49,833,600 |
| 1923 | 1,541,000 | 40.0 | 61,640,000 | 91 | 56,092,000 |
| 1924 | 1,316,000 | 36.5 | 48,034,000 | 118 | 56,6[illegible]0,000 |
| 1925 | 1,408,000 | 51.0 | 71,808,000 | 80 | 57,446,000 |
| 1926 | 1,394,000 | 41.0 | 57,154,000 | 78 | 44,580,000 |

Potato Yields Increasing. A study of the acre yields of potatoes since the Civil War (See Fig. 18 and Table 22) shows a very pronounced decline during the 30 years following the war and then a gradual increase in yield to approximately 100 bushels for the last decade. Various factors contributed to the decline from 1866 to 1895, among which were the increasing menace of insects and diseases and

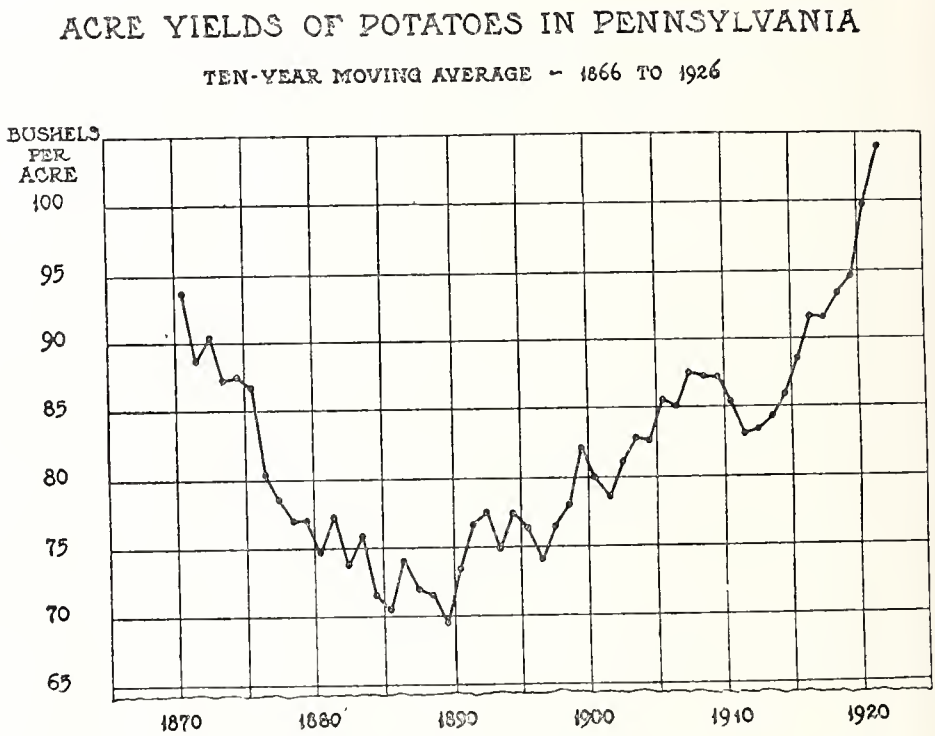


Fig. 18. Chart to show the increase in average acre yield of Potatoes since 1890.

declining prices during that period. The increase in acre yield since 1895 is no doubt due to several factors, among them being improved seed strains and varieties, and the control of diseases and insects by the use of disease-free seed and better spraying methods and equipment. With this successful control has also come better care and management and especially more fertilization.

It will be noticed that there has been a rapid and constant increase in potato yields since 1915. This increasing yield per acre accompanied by relatively low costs places Pennsylvania in an excellent position to successfully compete with other states in potato production. This is especially significant since the State does not produce nearly so many potatoes as are consumed within its borders.

Estimates on the potato crop both for the State and the country as a whole (See Tables 22 and 23) enable growers to formulate a better judgment of market possibilities, and in seasons like 1925 and 1926, to profit from holding their crop rather than sacrificing

it at a low price at or soon after harvest. In other words, potato producers are given the same opportunity as the speculators who have ways and means of knowing the situation throughout the country.

TABLE 22. Potato Acreage, Yield per Acre, Production, Price Per Bushel, and Farm Value on December 1 for the Years From 1866 to 1926 Inclusive

| Year | Acreage | Yield per acre | Production | Price per bu. | Farm value Dec. 1 |
|---|---|---|---|---|---|
| | Acres | Bu. | Bushels | Cts. | Dollars |
| 1866 | 157,471 | 99 | 15,636,859 | 53 | 8,264,265 |
| 1867 | 157,620 | 74 | 11,727,000 | 74 | 8,736,447 |
| 1868 | 134,681 | 88 | 11,852,000 | 69 | 8,201,161 |
| 1869 | 150,980 | 102 | 15,400,000 | 48 | 7,321,712 |
| 1870 | 127,402 | 87 | 11,081,000 | 70 | 7,760,790 |
| 1871 | 104,901 | 112 | 11,749,000 | 49 | 5,811,166 |
| 1872 | 112,737 | 99 | 11,161,000 | 56 | 6,228,016 |
| 1873 | 110,437 | 96 | 10,602,000 | 60 | 6,345 580 |
| 1874 | 109,797 | 84 | 9,223,000 | 71 | 6,570,0.6 |
| 1875 | 127,604 | 96 | 12,250,000 | 37 | 4,485,615 |
| 1876 | 136,000 | 50 | 6,800,000 | 78 | 5,297,192 |
| 1877 | 150,000 | 90 | 13,500,000 | 42 | 5,646,8 7 |
| 1878 | 154,500 | 58 | 8,961,000 | 70 | 6,260,180 |
| 1879 | 168,400 | 104 | 17,513,600 | 37 | 6,480,032 |
| 1880 | 170,080 | 79 | 13,436,320 | 48 | 6,449,434 |
| 1881 | 183,575 | 48 | 8,811,000 | 97 | 8,547,252 |
| 1882 | 196,425 | 81 | 15,860,880 | 57 | 9,040,702 |
| 1883 | 202,318 | 80 | 16,185,440 | 45 | 7,283,448 |
| 1884 | 192,202 | 85 | 16,337,000 | 39 | 6,371,430 |
| 1885 | 190,280 | 72 | 13,700,000 | 47 | 6,439,075 |
| 1886 | 192,183 | 76 | 14,600,000 | 46 | 6,718,760 |
| 1887 | 194,105 | 55 | 10,676,000 | 70 | 7,473,200 |
| 1888 | 203,810 | 80 | 16,305,000 | 40 | 6,521,920 |
| 1889 | 195,198 | 60 | 11,711,880 | 46 | 5,387,465 |
| 1890 | 195,198 | 68 | 13,273,464 | 77 | 10,220,567 |
| 1891 | 201,054 | 84 | 16,888,536 | 43 | 7,262,070 |
| 1892 | 195,022 | 60 | 11,701,320 | 72 | 8,424,950 |
| 1893 | 198,922 | 76 | 15,118,072 | 60 | 9,070,8.3 |
| 1894 | 206,879 | 64 | 13,240,256 | 57 | 7,546,946 |
| 1895 | 208,948 | 111 | 23,193,228 | 28 | 6,494,104 |
| 1896 | 194,322 | 109 | 21,181,098 | 27 | 5,718,896 |
| 1897 | 169,060 | 63 | 10,650,780 | 66 | 7,029,515 |
| 1898 | 172,441 | 54 | 9,311,814 | 58 | 5,400,852 |
| 1899 | 179,339 | 85 | 15,243,815 | 43 | 6,554,840 |
| 1900 | 188,306 | 58 | 10,921,748 | 53 | 5,788,526 |
| 1901 | 237,134 | 62 | 14,702,308 | 76 | 11,173,754 |
| 1902 | 246,619 | 83 | 20,469,377 | 57 | 11,667,545 |
| 1903 | 244,153 | 91 | 22,217,923 | 62 | 13,775,112 |
| 1904 | 256,361 | 106 | 27,174,266 | 54 | 14,674,104 |
| 1905 | 253,797 | 90 | 22,841,730 | 65 | 14,847,124 |
| 1906 | 253,797 | 94 | 23,856,918 | 57 | 13,598,443 |
| 1907 | 261,000 | 88 | 22,968,000 | 67 | 15,3 9,000 |
| 1908 | 277,000 | 72 | 19,944,000 | 80 | 15,955,000 |
| 1909 | 262,000 | 83 | 21,741,000 | 65 | 14,132,0 0 |
| 1910 | 275,000 | 88 | 24,200,000 | 52 | 12,584,000 |
| 1911 | 270,000 | 56 | 15,120,000 | 93 | 14,062,000 |
| 1912 | 265,000 | 109 | 28,885,000 | 57 | 16,464,000 |
| 1913 | 265,000 | 88 | 23,320,000 | 80 | 18,656,000 |
| 1914 | 268,000 | 105 | 28,140 000 | 58 | 16,321 000 |
| 1915 | 280,000 | 72 | 20,160,000 | 75 | 15,120,000 |
| 1916 | 272,000 | 70 | 19,040,000 | 148 | 28,179,000 |
| 1917 | 321,000 | 92 | 29,532,000 | 135 | 39,868,000 |
| 1918 | 275,000 | 80 | 22,000,000 | 151 | 33,220,000 |
| 1919 | 234,000 | 100 | 23,400,000 | 154 | 36,036,000 |
| 1920 | 246,000 | 115 | 28,290,000 | 124 | 35,080,000 |
| 1921 | 251,000 | 86 | 21,586,000 | 133 | 28,709,000 |
| 1922 | 254,000 | 108 | 27,432,000 | 75 | 20,574 000 |
| 1923 | 249,000 | 105 | 26,145,000 | 105 | 27,4[illegible]2,000 |
| 1924 | 210,000 | 118 | 24,780,000 | 80 | 19,824,000 |
| 1925 | 202,000 | 123 | 24,846,000 | 194 | 48,201,000 |
| 1926 | 198,000 | 112 | 22,176,000 | 170 | 37,699,000 |

TABLE 23. Potato Production, Average Price and Total Value for the United States, 1920-1926 Inclusive

| Year | Average | Yield | Bushels | Ave. Price | Total Value |
|---|---|---|---|---|---|
| 1920 | 3,657,000 | 110.3 | 403,296,000 | $1.15 | $461,778,000 |
| 1921 | 3,941,000 | 91.8 | 361,659,000 | 1.10 | 398,362,000 |
| 1922 | 4,307,000 | 105.3 | 453,396,000 | .58 | 263,355,000 |
| 1923 | 3,816,000 | 109.0 | 416,105,000 | .78 | 324,889,000 |
| 1924 | 3,327,000 | 126.7 | 421,585,000 | .63 | 263,312,000 |
| 1925 | 3,092,000 | 104.6 | 323,465,000 | 1.87 | 604,072,000 |
| 1926 | 3,151,000 | 113.1 | 356,360,000 | 1.42 | 504,993,000 |

**Tobacco Production Trends.** Another example of the historical facts revealed by crop statistics is that of tobacco. In 1866, the earliest date for which figures are available, Pennsylvania produced 4,960,000 pounds of tobacco on 6,200 acres of land, or about 800 pounds per acre. In 1926 the State produced a total of 43,560,000 pounds of tobacco on 33,000 acres, or an average of 1,320 pounds per acre. The tobacco industry has experienced more change than almost any other Pennsylvania farm enterprise during this period of sixty years. The acreage is five times greater and the yield almost doubled due to better fertilization and other improved methods. The highest tobacco acreage on record was 46,000 acres in 1924; the largest acre yield, 1,510 pounds in 1920; and the greatest total production 65,320,000 pounds in 1911.

**Livestock Trends.** By the use of the Federal Census figures and estimates for the various counties of the State, it is possible to gain an idea of the trend of the livestock industry in various sections of the State. The statistics for sheep can be taken as an example (See Table 24). The number of sheep in the State reached the peak about 1880, and in the United States about 1900. Since that time the number in Pennsylvania has been decreasing rapidly until the last few years, according to the estimates.* It appears that the marked decrease has been checked and it is hoped that the industry, fostered by better prices and the more efficient enforcement of the dog law, may regain some of its former importance in the State. Other factors which are also aiding in this change are the taking up of the free grazing lands of the West and the increasing land values in other sheep raising sections.

*See table 24.

TABLE 24. Census Figures for Sheep for 1880-1920 and Estimates for 1926*

| COUNTY | 1880 | 1890 | 1900 | 1910 | 1920 | 1926 |
|---|---|---|---|---|---|---|
| Adams, | 5,692 | 7,446 | 3,464 | 3,785 | 3,148 | 2,840 |
| Allegheny | 55,220 | 20,665 | 6,499 | 4,579 | 3,161 | 3,020 |
| Armstrong, | 34,814 | 32,846 | 14,860 | 7,857 | 5,559 | 4,760 |
| Beaver, | 80,465 | 42,436 | 22,659 | 16,447 | 9,546 | 8,510 |
| Bedford, | 16,868 | 26,508 | 16,608 | 12,043 | 10,666 | 9,080 |
| Berks | 2,823 | 2,729 | 1,157 | 508 | 1,074 | 1,080 |
| Blair, | 7,843 | 9,219 | 5,450 | 3,733 | 3,375 | 3,370 |
| Bradford, | 40,370 | 44,345 | 33,718 | 12,239 | 11,049 | 11,790 |
| Bucks, | 5,228 | 2,702 | 1,282 | 1,293 | 2,062 | 1,950 |
| Butler, | 56,669 | 52,364 | 24,650 | 13,844 | 9,251 | 8,870 |
| Cambria, | 14,725 | 14,130 | 7,405 | 2,525 | 2,328 | 2,110 |
| Cameron, | 983 | 1,337 | 838 | 337 | 626 | 750 |
| Carbon, | 241 | 194 | 99 | 51 | 24 | 30 |
| Centre, | 14,547 | 16,806 | 8,703 | 6,689 | 5,128 | 5,470 |
| Chester, | 15,149 | 11,157 | 5,633 | 3,027 | 5,556 | 6,230 |
| Clarion, | 16,824 | 21,834 | 9,390 | 4,068 | 2,765 | 2,800 |
| Clearfield, | 14,883 | 18,784 | 8,614 | 2,714 | 2,369 | 1,890 |
| Clinton, | 3,223 | 3,216 | 1,335 | 993 | 669 | 730 |
| Columbia, | 5,039 | 5,439 | 1,828 | 596 | 992 | 820 |
| Crawford, | 57,501 | 79,578 | 37,598 | 18,887 | 12,370 | 12,380 |
| Cumberland, | 8,772 | 13,193 | 8,563 | 7,932 | 8,853 | 7,810 |
| Dauphin, | 2,418 | 1,738 | 1,067 | 806 | 744 | 2,190 |
| Delaware, | 1,629 | 948 | 799 | 886 | 1,556 | 1,420 |
| Elk, | 1,973 | 2,236 | 1,174 | 251 | 231 | 230 |
| Erie, | 33,411 | 31,589 | 17,477 | 8,358 | 7,044 | 7,750 |
| Fayette, | 58,472 | 35,287 | 21,294 | 6,972 | 6,218 | 6,180 |
| Forest, | 1,770 | 2,734 | 1,743 | 599 | 802 | 710 |
| Franklin, | 11,672 | 14,593 | 9,285 | 10,779 | 10,214 | 10,990 |
| Fulton, | 6,591 | 6,898 | 4,996 | 4,458 | 2,831 | 2,780 |
| Greene, | 158,372 | 172,517 | 133,595 | 141,373 | 122,793 | 123,270 |
| Huntingdon, | 16,373 | 18,847 | 12,465 | 8,074 | 5,885 | 7,450 |
| Indiana, | 61,732 | 50,744 | 25,915 | 9,466 | 7,704 | 7,680 |
| Jefferson, | 17,082 | 13,780 | 6,264 | 1,914 | 2,512 | 2,250 |
| Juniata, | 7,132 | 7,515 | 3,805 | 2,416 | 1,940 | 1,990 |
| Lackawanna, | 6,451 | 6,681 | 3,369 | 1,473 | 1,168 | 1,140 |
| Lancaster, | 7,064 | 5,760 | 3,495 | 3,426 | 5,245 | 5,140 |
| Lawrence, | 72,826 | 57,381 | 23,368 | 13,687 | 8,459 | 7,310 |
| Lebanon, | 1,704 | 972 | 156 | 304 | 955 | 1,030 |
| Lehigh, | 1,543 | 1,446 | 300 | 391 | 562 | 610 |
| Luzerne, | 5,085 | 7,061 | 3,422 | 1,734 | 1,699 | 1,540 |
| Lycoming, | 9,621 | 12,108 | 5,210 | 3,315 | 2,127 | 2,040 |
| McKean, | 6,935 | 13,221 | 11,147 | 3,196 | 3,780 | 3,290 |
| Mercer, | 90,001 | 99,014 | 47,183 | 25,542 | 19,630 | 20,430 |
| Mifflin, | 5,632 | 7,092 | 4,210 | 3,077 | 2,802 | 2,870 |
| Monroe, | 3,544 | 3,345 | 1,331 | 1,352 | 944 | 980 |
| Montgomery, | 2,809 | 1,803 | 1,881 | 1,409 | 2,458 | 3,010 |
| Montour, | 2,044 | 2,254 | 776 | 304 | 441 | 360 |
| Northampton, | 3,593 | 2,357 | 954 | 864 | 1,715 | 1,850 |
| Northumberland, | 3,164 | 2,667 | 675 | 602 | 1,021 | 790 |
| Perry, | 5,437 | 4,775 | 2,522 | 2,163 | 2,773 | 2,220 |
| Philadelphia, | 153 | 218 | 144 | 69 | 167 | 200 |
| Pike, | 1,575 | 1,026 | 1,696 | 792 | 495 | 450 |
| Potter, | 15,034 | 22,684 | 18,663 | 8,493 | 7,686 | 7,120 |
| Schuylkill, | 1,070 | 788 | 191 | 214 | 335 | 290 |
| Snyder, | 2,701 | 1,372 | 397 | 438 | 390 | 370 |
| Somerset, | 26,063 | 30,832 | 18,837 | 8,755 | 7,481 | 6,270 |
| Sullivan, | 7,427 | 12,414 | 7,094 | 3,712 | 3,524 | 3,550 |
| Susquehanna, | 40,188 | 41,565 | 25,493 | 10,296 | 7,451 | 7,950 |
| Tioga, | 29,538 | 49,313 | 41,344 | 16,948 | 10,334 | 11,580 |
| Union, | 1,870 | 1,800 | 819 | 573 | 420 | 420 |
| Venango, | 31,100 | 33,508 | 15,687 | 8,081 | 6,939 | 7,090 |
| Warren, | 12,223 | 14,582 | 10,733 | 4,579 | 3,283 | 2,970 |
| Washington, | 461,120 | 321,033 | 211,741 | 171,597 | 117,936 | 118,600 |
| Wayne, | 19,543 | 21,816 | 11,994 | 5,091 | 3,213 | 2,940 |
| Westmoreland | 46,386 | 24,149 | 14,103 | 8,551 | 7,593 | 6,730 |
| Wyoming, | 8,115 | 11,989 | 7,058 | 3,733 | 1,973 | 2,110 |
| York, | 8,533 | 8,677 | 2,705 | 2,245 | 2,667 | 3,350 |
| Total | 1,776,598 | 1,612,107 | 959,483 | 637,541 | 508,711 | 507,000* |

*Revisions based on final 1925 U. S. Census data place the number of sheep on Pennsylvania farms, January 1, 1926, at 415,000 head. These data, by counties, will appear in the 1926 annual crop and livestock bulletin.

Other significant livestock trends revealed by the statistics over a period of years are the noticeable decrease in the number of horses since 1915, due to the introduction of mechanical power, and the decrease in number of milk cows since 1910. The latter trend is unquestionably a mark of progress since it shows the elimination from the fold of a large number of poor producers, which have been replaced by high grade and purebred, tuberculosis-free animals.

## Plans for 1927 Triennial Farm Census

Under the provisions of the Act of 1921, the first State Triennial Farm Census was gathered in the autumn of 1924 and tabulated early in 1925. This information was gathered by the township and borough assessors in 1924 when making the triennial assessment for county purposes. The commissioners and assessors in general showed splendid cooperation. The service of the assessors was paid for by the counties. Similar reports are gathered by the assessors of many other agricultural states, not only every three years, but annually. This report contains information relating to the number of farms, farm population farm acreage, acreage of the principal crops, livestock on the farms, and farm equipment and conveniences.

Since being compiled the information resulting from the triennial farm census has been used by the agricultural interests of this State in many ways for the advancement of farm industry in its different phases. As already stated, almost daily requests are coming to the Bureau for statistical information relating to the different phases of farm life. The triennial farm census has yielded a vast quantity of facts which the Bureau constantly refers to in supplying desired information. For example, a County Agent in one of the western counties wanted to make a survey of the sheep industry of his county. We were able to furnish him a list of the sheep farmers of his county. In another instance a concern was contemplating the locating of a creamery in a certain locality and upon request we were able to tell approximately the number of dairy cattle in that section. The information on file in this Bureau can be and is used in many different ways for the encouragement and advancement of agriculture in the Keystone State.

It is the thought of the Bureau of Statistics at the present time to ask the Legislature of 1927 to make an appropriation to reimburse the Counties in part for taking the next triennial farm census. If this is successful, it will be an encouragement to the County Commissioners and will assure a full and correct report or as nearly correct as it is possible to make a census. The information will be used as the basis in making monthly crop and livestock reports, and will be a direct and material benefit to the County Commissioners, all agricultural organizations and for the best interest and advancement of agriculture. The 1924 triennial census figures were a very valuable check against the Federal Census of 1925.

## Crop and Livestock Report

During 1926 this Bureau has issued a Crop and Livestock Report and a directory of County and State Organizations. The crop and livestock report contains statistical information relating to the principal farm crops, fruit, livestock, livestock products, and much information incident to agriculture. No other state in the Union gathers as much miscellaneous material relating to commercial fertilizer and lime used by the farmers, farm machinery and labor saving devices, farm home conveniences, etc. Pennsylvania was a pioneer in this particular branch of farm statistics. Plans have been formulated for the addition of other features from year to year until in due time the crop and livestock report will be recognized as a hand book of statistical matter pertinent to Pennsylvania agriculture. The directory contains a list of the County and State Agricultural Organizations with the organization and address of each. This service is a great help in many ways and is a medium for the agricultural agencies to cooperate for the advancement of their common cause.